

PUBLIC HEALTH DEPARTMENT.

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REPORT

ON THE HEALTH OF THE

CITY OF LIVERPOOL

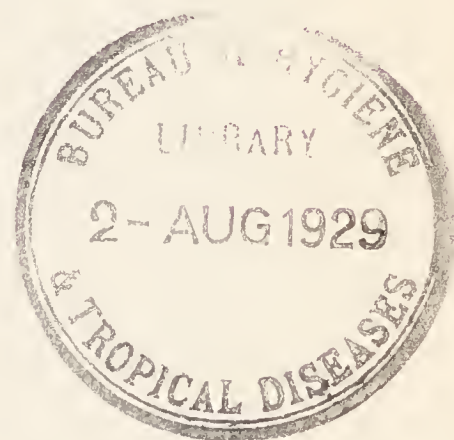
DURING THE YEAR

— 1928 —

BY

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*Medical Officer of Health.*



LIVERPOOL.

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APPENDIX.

- Ministry of Health Tables of Population, Births, Deaths, Infantile Mortality and Infectious Sickness. Tables I, II, III and IV.
- Table of Total Deaths registered in the City.
- Plan of Liverpool, showing Birth, Death and Infant Mortality Rates, Population per acre of Districts including the Incorporated Area.

## PREFACE.

---

An extension of the city boundary took place on the 1st April, 1928, when the parishes of Croxteth Park and West Derby Rural were added to the city. This increases the area of the City from 21,219 acres to 24,772 acres.

The birth rate for the year 1928 was 22·1 per thousand of the population as against 22·2 during the previous year. The birth rate for the whole of England and Wales was 16·7.

The general death rate was 13·2 per thousand of the population, and is the lowest ever recorded in the city. The lowest death rate previously recorded was in 1924, when it was 13·6.

The infant mortality rate was 94 per thousand births, which is equal to the lowest rate on record and is the same as last year.

On the whole, the health of the city during the year was exceptionally good, but measles, whooping cough, and influenza still continue to take their toll of human life, and do not appear to be checked by the usual preventive measures.

At the end of the year an increase in the number of deaths from influenza was observed: this was the beginning of a serious outbreak of the disease, which extended into 1929, and which proved to be the most serious visitation of recent years, with the exception of that of 1918-19. In order that the continuity of the account may not be broken its main characteristics up to March, 1929, are included in this Report, (pages 45-49). The epidemic appeared to originate in the United States of America, and reached this country and the Continent about a month later, first appearing in Glasgow and gradually spreading throughout the whole country. The full effect is not shown in the present Report, but will be reflected in the vital statistics of the city for the year 1929.

Two cases of smallpox occurred during the year. In both cases, the usual precautionary measures were adopted, and fortunately no extension of the disease took place. It is pleasing to record the freedom of the city from this disease, especially when it is remembered that there were 12,000 cases of smallpox throughout the whole of England and Wales, and of these over 900 occurred in the county of Lancashire. Liverpool is, of course, subject to the importation of this and other diseases by sea, but the close watch which is being kept on ships and in ports all over the world is having a beneficial result, and is shown by a reduction in the number of cases of dangerous infectious disease which are now found on ships arriving in the port. Infantile vaccination has been well carried out as in previous years, and probably the population of Liverpool is as well vaccinated as any other city in the kingdom.

During the year, the question of smallpox cases in neighbouring areas was specially considered by the Port Sanitary and Hospitals Committee, and after considerable negotiation an agreement has been arrived at with about 12 local authorities adjoining the Liverpool area, that they will pay a retaining fee each year, based on the census population, towards the upkeep of a smallpox hospital. A further charge is made for the maintenance and treatment of each patient sent into the hospital. This arrangement will ensure that cases will be promptly isolated, without the smaller authorities having to meet the cost of keeping a smallpox hospital in readiness throughout the year.

The plans relating to the new city abattoir have been passed by the Ministry of Health after a Public Inquiry, which was held on the 26th June, 1928, and building operations have commenced on the Stanley Cattle Market site.

The erection of new houses on various estates on the outskirts of the city has been carried on throughout the year, and from the statistics given it will be noted that since 1919 the Corporation have erected and completed 17,432 houses. These dwellings are all occupied.

On the 29th June, 1928, the Minister of Health visited the city and performed the opening ceremony of a housing scheme in South Hill Road. This block consists of 198 tenements, each containing a living room, scullery, bathroom, water-closet, and two or three bedrooms.

Each tenement is supplied with electric light and gas. In the lower floor space is provided which is being fitted up as a Maternity and Child Welfare Clinic, and a further portion is being equipped by the Libraries Committee as a Branch Lending Library and Reading Room. The building of this block of tenements may be said to constitute the beginning of a new period in the clearance of the Liverpool slums. A similar but larger scheme for the North district of the city is rapidly approaching completion.

In the Report for 1927 details were given of the Queen Anne Street area, which was officially presented by the Medical Officer of Health in January, 1928. This was followed by a Public Inquiry in May, and in October of the same year an Order from the Ministry of Health was received, approving of the scheme.

As this consists of approximately  $5\frac{3}{4}$  acres, upon the cleared site of which it is proposed to erect 408 houses, it will form a substantial addition to the sanitary dwellings in the built up central area.

The Nursing Homes Registration Act, 1927, which came into operation on the 1st July, requires the registration of all Nursing Homes. This Act repeals the section in the Liverpool Corporation Act, 1921, which required the registration of lying-in homes, which was a pioneer provision in regard to the registration and inspection of these establishments.

A. A. MUSSEN,

*Medical Officer of Health.*

PUBLIC HEALTH DEPARTMENT,

MUNICIPAL BUILDINGS,

LIVERPOOL,

1st July, 1929.



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# STATISTICS

RELATING TO

BIRTHS, DEATHS, AND CAUSES OF DEATH, &c.,  
ZYMOTIC DISEASES AND THEIR INCIDENCE.

---

# SUMMARY

## OF

### VITAL STATISTICS FOR 1928.

---

Area of City ... ..	24,772	Acres.
		(39 square miles)
Population (estimated to the middle of the year) ... ..	866,000	
Births ... ..	19,120,	Birth-rate 22.1.
Deaths ... ..	11,432,	Death-rate 13.2.
Infantile Mortality ... ..	1,789	Deaths under one year.
Infant Mortality Rate ... ..	94	per 1,000 Births.
Zymotic Death-rate (7 principal Zymotic Diseases) ... ..	0.66	per 1,000.
All forms of Tuberculosis (including Phthisis)... ..	1.38	per 1,000.
Phthisis Death-rate ... ..	1.18	per 1,000.

## CITY OF LIVERPOOL.

## EXTENSION OF THE CITY BOUNDARIES.

On the 1st April, 1928, an extension of the boundary of the City took place, by the inclusion of the Parishes of Croxteth Park and West Derby Rural, which were under the jurisdiction of the Rural District Council of Sefton and also formed part of the West Derby Union. The births and deaths in these districts for the whole year have been included in the annual returns for the city.

The populations of these added areas at the Census of 1921 were :—

Croxteth Park	...	...	...	...	...	71
West Derby Rural	...	...	...	...	...	2,137

## REGISTRATION DISTRICTS.

By an Order of the Registrar General dated the 11th September, 1928, the following alterations in the Registration Districts of the city were made as from 1st October, 1928, viz. :—

“The Toxteth Park Central sub-district shall be extended by the addition of the Sefton Park East (Toxteth East) Ward, and shall be known as Toxteth Park North.

“The Toxteth Park West sub-district shall be extended by the addition of the Sefton Park West Ward, and shall be known as the Toxteth Park South.”

This does away with the Registration District known as Toxteth East, the whole district being absorbed into the other two Toxteth districts.

As the alterations came into effect at the beginning of the last quarter of the year only, the statistics for the registration districts of Toxteth and Toxteth East were carried on as usual until December 31st, 1928.

**BIRTHS.**

The number of births recorded during the year 1928 within the city was 19,120, equal to a rate of 22·1 per 1,000 of the population, the average of the previous five years (1923-1927) being 23·6. Of the total

births, 9,762 were males, and 9,358 were females. The number of illegitimate births was 882, or 4·6 per cent. of the total births, 441 being males and 441 females.

The Registrar General intimated that 310 births (144 males and 166 females) should be added to and 487 births (245 males and 242 females) deducted from the total number of births registered in the city. These corrections for transferable births having been made, the net figures are as given above.

The birth rate in the City of Liverpool is considerably above the average of the great towns, which is 16·9 per 1,000 of the population, as well as of England and Wales taken as a whole, where the rate is 16·7 per 1,000, for the year 1928.

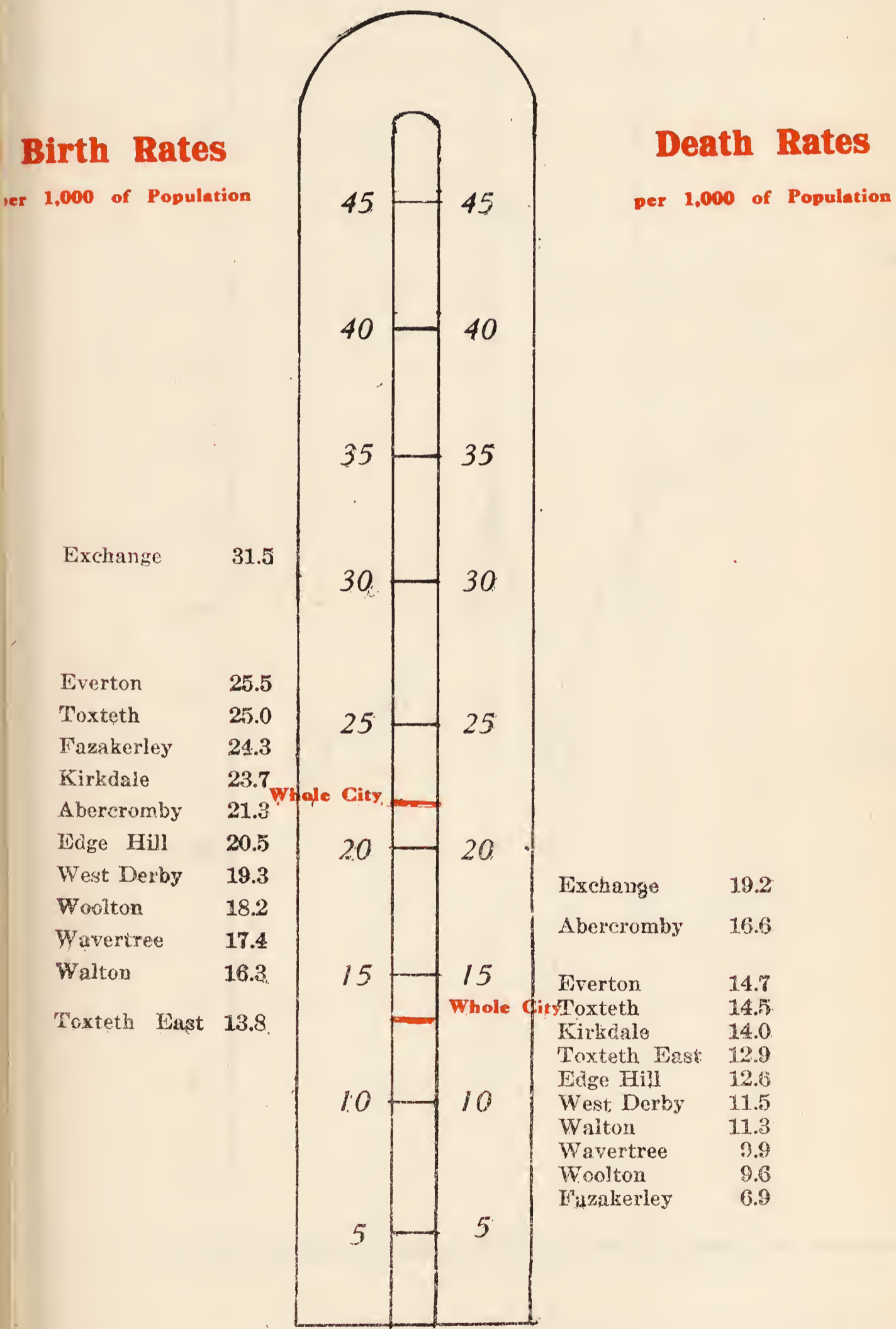
### BIRTH AND DEATHS IN DISTRICTS.

The following table shows the population, number of births and deaths, and the rates per 1,000 in each district of the city for the year 1928 :—

Districts.	Estimated Population 1928.	BIRTHS.		DEATHS.	
		Number of Births.	Rate per 1,000.	Number of Deaths.	Rate per 1,000.
EXCHANGE ... ..	82,359	2,597	31·5	1,586	19·2
ABERCROMBY ... ..	45,002	957	21·3	751	16·6
EVERTON ... ..	116,773	2,977	25·5	1,712	14·7
KIRKDALE ... ..	64,181	1,523	23·7	895	14·0
EDGE HILL ... ..	91,551	1,881	20·5	1,152	12·6
TOXTETH ... ..	103,284	2,586	25·0	1,502	14·5
WALTON ... ..	90,571	1,482	16·3	1,022	11·3
WEST DERBY ... ..	97,175	1,873	19·3	1,115	11·5
WAVERTREE ... ..	94,310	1,644	17·4	937	9·9
TOXTETH (EAST)... ..	30,638	424	13·8	395	12·9
FAZAKERLEY ... ..	42,850	1,043	24·3	295	6·9
WOOLTON ... ..	7,306	133	18·2	70	9·6
	866,000	19,120	22·1	11,432	13·2

# CITY OF LIVERPOOL.

COMPARATIVE VIEW OF THE BIRTH AND DEATH RATES PER 1,000 IN THE DIFFERENT DISTRICTS OF THE CITY DURING THE YEAR 1928.



DEATHS IN PUBLIC INSTITUTIONS ARE TRANSFERRED TO THE DISTRICTS FROM WHENCE THE PATIENTS CAME.

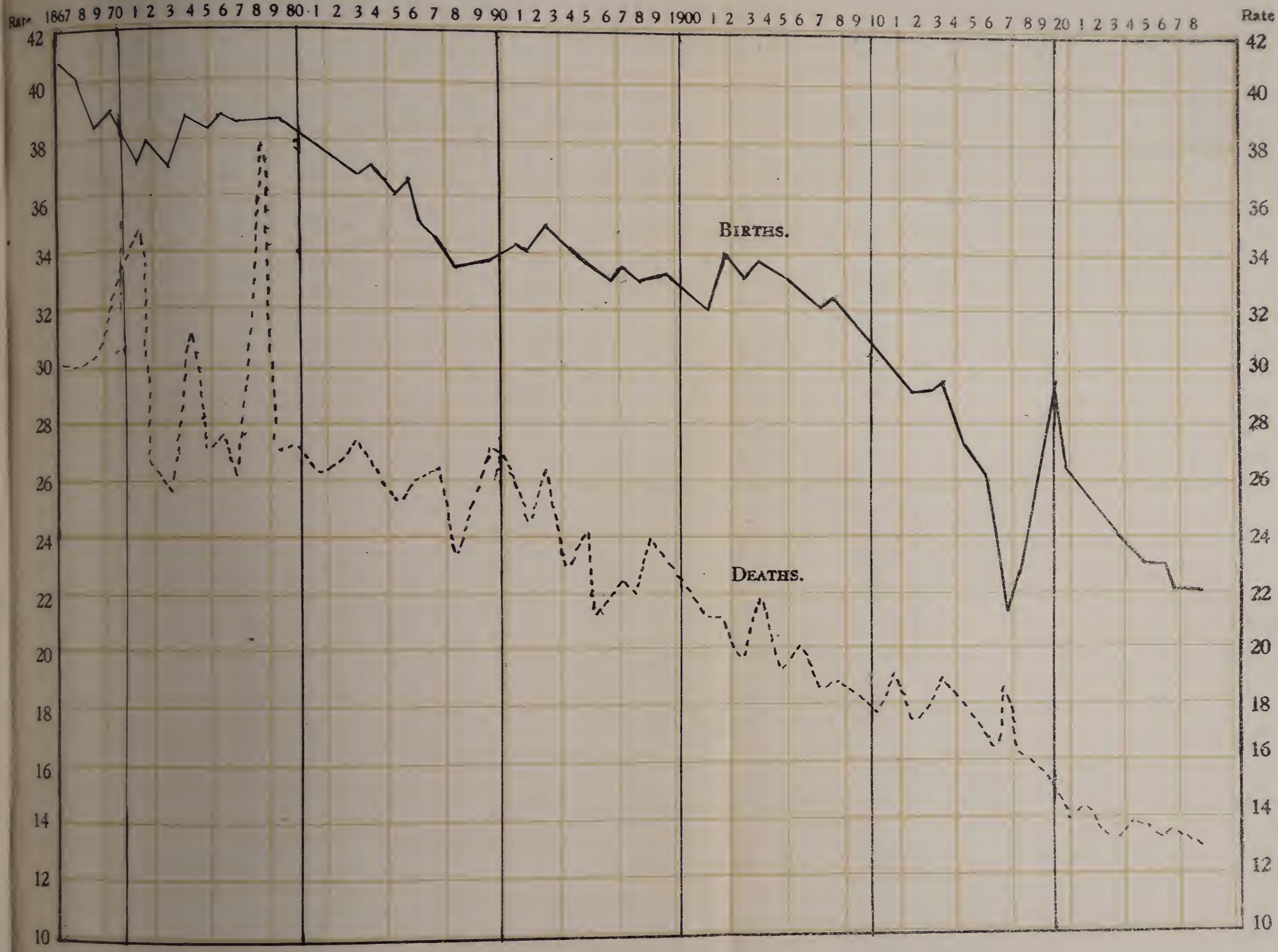
# CITY OF LIVERPOOL

COMPARATIVE VIEW OF THE BIRTH AND DEATH RATES PER 1,000 IN THE SEVERAL DISTRICTS OF THE CITY DURING THE YEAR 1924



# CITY OF LIVERPOOL.

BIRTH AND DEATH RATES PER 1000 OF THE POPULATION FOR THE YEARS 1867 TO 1928



CITY OF LIVER

REPORT ON THE WATER SUPPLY OF THE CITY

FOR THE YEAR 1901



The following table shows the population, births and deaths, with birth and death rates during the last 20 years (1909 to 1928) :—

Year.			Population.	No. of Births.	Birth Rate per 1,000 of Population.	No. of Deaths.	Death Rate per 1,000 of Population.
1909	...	...	739,073	23,591	31·9	13,945	18·8
1910	...	...	742,742	23,054	31·0	13,343	17·9
1911	...	...	747,998	22,493	30·0	14,607	19·5
1912	...	...	754,143	22,233	29·5	13,364	17·7
1913	...	...	*760,341	22,555	29·6	13,658	18·0
1914	...	...	773,467	23,065	29·8	15,046	19·4
1915	...	...	779,535	21,586	27·7	14,478	18·6
1916	...	...	785,657	20,679	26·3	13,943	17·7
1917	...	...	791,828	17,906	22·6	13,093	16·5
1918	...	...	798,048	17,133	21·5	15,267	19·1
1919	...	...	804,316	18,694	23·2	13,283	16·5
1920	...	...	810,632	25,039	30·9	12,852	15·8
1921	...	...	817,000	21,904	26·8	11,666	14·3
1922	...	...	823,416	21,467	26·1	11,992	14·6
1923	...	...	829,881	20,695	24·9	11,405	13·7
1924	...	...	836,396	20,559	24·6	11,390	13·6
1925	...	...	842,968	19,592	23·3	11,902	14·1
1926	...	...	849,593	19,792	23·3	11,626	13·7
1927	...	...	856,266	19,020	22·2	11,874	13·9
1928	...	...	*866,000	19,120	22·1	11,432	13·2

\* City Area extended.

## DEATHS.

The total deaths registered in the city during the year numbered 12,009. Of these deaths 998 were those of non-residents, chiefly occurring in public institutions, nursing homes, &c., and these were excluded from the returns. On the other hand, the deaths of 421 Liverpool residents which occurred in other districts and the County Asylums, &c., were included in the returns for the year.

This gives a corrected number of deaths of 11,432, being 6,006 males and 5,426 females, for the year, equal to a death rate of 13·2 per 1,000 of the population, which is the lowest rate recorded. The death rates for England and Wales and the great towns during the year were 11·7 and 11·6 respectively.

It will be seen that in the five years (1909-1913) the average death rate was 18·4 per 1,000, whilst during the last five years (1924-1928) the average rate was 13·7 per 1,000.

A comparison of the table on page 12 with previous reports will show that this improvement is not confined to the infant mortality nor to the mortality at any particular age, but is a general improvement affecting the whole of the population. It is plain that any variation in the *proportions* living at the respective age-periods would affect the death rate, and this with absolutely no change whatever in the condition of municipal sanitation. These proportions, however, vary very slowly and very slightly year by year in each district, so that yearly comparisons of the mortality rate of the same district may be fairly made, but one district should not be put into comparison with another unless the age and sex conditions of each are known, and the necessary corrections made.

## CAUSES OF DEATH.

Full details as to the causes of death are set forth in Table *E* in the Appendix; in the same table the age at which each death took place and the district in which it occurred will also be found.

The following table gives a classification of the causes of death during the four quarters of the year, shown under 15 classes, and the number of deaths at each age-group :—

CLASSES.					QUARTERS.				YEAR 1928.
					March	June	Sept.	Dec.	
ALL CAUSES ... ..					3,612	2,633	2,341	2,846	11,432
I. Infective Diseases ... ..					605	539	385	469	1,998
II. General Diseases ... ..					400	341	372	327	1,440
III. Dis. of Nervous System ... ..					332	264	173	213	982
IV. do. Circulatory do. ... ..					488	361	347	484	1,680
V. do. Respiratory do. ... ..					1,065	526	339	558	2,488
VI. do. Digestive do. ... ..					194	139	221	230	784
VII. do. Genito Urinary do. ... ..					133	117	109	137	496
VIII. The Puerperal State ... ..					16	17	13	18	64
IX. Dis. of Skin, etc. ... ..					21	21	13	20	75
X. do. Bones, etc. ... ..					5	4	2	4	15
XI. Malformations ... ..					28	11	14	26	79
XII. Dis. of Early Infancy ... ..					157	99	125	139	520
XIII. Old Age ... ..					71	102	133	104	410
XIV. External Causes ... ..					93	87	91	113	384
XV. Ill defined Causes ... ..					4	5	4	4	17
Ages at Death.	{	Under 1 year ... ..			653	310	372	454	1,789
		1 to 5 years ... ..			363	236	198	241	1,038
		5 to 10 years ... ..			61	43	50	52	206
		10 to 15 ,, ... ..			39	43	30	48	160
		15 to 20 ,, ... ..			83	60	58	78	279
		20 to 25 ,, ... ..			83	71	64	78	296
		25 to 45 ,, ... ..			371	354	263	322	1,310
		45 to 65 ,, ... ..			887	689	583	720	2,879
		65 and upwards ... ..			1,072	827	723	853	3,475

### ANALYSIS OF DECLINE IN MORTALITY.

The accompanying tables (pages 10 and 11) show the deaths that have occurred in the city of Liverpool during the past 58 years. These have been separated into five principal classes of disease that are likely to be affected by the activities of the Health and other Municipal Departments, namely, "infective" diseases, tubercular diseases, respiratory diseases (including influenza), and digestive diseases (including diarrhoea and enteritis). These classes include the greater part of the diseases of infective origin. The deaths from cancer are placed in a separate column.

Despite the very great increase in population since 1871, the present population having nearly doubled since then, the actual numbers of deaths per annum have fallen from an average of 14,700 in the decennium 1871-1880 to 11,432 in the year 1928. The general death rate has fallen from 28·5 to 13·2 per thousand, a fall of over 50 per cent. This is the lowest death rate in the records of the city.

The greatest proportional decline has been experienced in the group of infectious diseases, which includes all the infectious diseases with the exception of influenza; the decline has been steady and uniform, and the deaths now registered in this group exhibit a decline of no less than 84 per cent. during the 58 years.

A similar steady decline has been shown by the tubercular diseases, which have fallen to 38·4 per cent. of the earlier figure. These deaths now account for less than 10 per cent. of the total.

In the group of respiratory diseases, although the death rate has been almost halved during the period under review, namely, between 1891-1900 and 1928, the decline has not been continuous; rises occurred in 1881-90 and in 1911-20, due in both cases to the prevalence of influenza. Although a marked decline in respiratory deaths has occurred, this decline is not commensurate with that recorded in deaths from all causes.

Digestive diseases, of which the diarrhœa and other digestive diseases of infants form the most important section, showed at first a slight decline from 1871 to 1890; in 1891-1900 there was a rise to 107 per cent. of the rate experienced in 1871-80. From that time on there has been a most marked and rapid decline to 32 per cent. of the 1871-80 rate of mortality. This decline coincides in time with the great efforts that have been put forward in this city for the prevention of infantile mortality.

In contrast, however, there has been a considerable increase in the deaths from cancer during the past 58 years (see page 10). The rate of mortality is now three times as high as in the seventies of last century.

If the general rate of mortality experienced in 1871-80 had prevailed during the year 1928, there would have been 24,681 deaths instead of 11,432, the number actually recorded, a saving of 13,249 lives being thereby effected.

# CITY OF LIVERPOOL.

DEATHS FROM CERTAIN GROUPS OF DISEASES IN EACH DECADE FROM 1871 to 1920 and DURING 1921 to 1928.

Years.	(a) Infective diseases (less Diarrhoea and Influenza).	(b) Tubercular diseases.	(c) Respiratory diseases (including Influenza).	(d) Digestive diseases (including Diarrhoea).	Total Deaths from Classes (a),(b), (c) & (d)	(e) Cancer.	Total Deaths from all causes.
1871-1880 .....	27,205	19,869	29,763	14,747	91,584	2,015	147,005
1881-1890 .....	19,748	17,870	32,507	13,186	86,311	2,820	146,195
1891-1900 .....	13,515	16,714	35,819	18,491	84,539	4,223	145,522
1901-1910 .....	13,967	16,054	32,995	18,163	81,179	6,480	150,962
1911-1920 .....	10,417	14,946	36,480	12,282	74,125	7,603	137,223
1921-1925 .....	4,076	6,532	15,075	4,161	29,731	4,598	58,355
1926 .....	708	1,250	2,809	952	5,719	993	11,626
1927 .....	713	1,179	3,083	796	5,771	977	11,874
1928 .....	700	1,199	2,587	784	5,270	1,100	11,432

DEATHS EXPRESSED AS A PERCENTAGE OF TOTAL DEATHS FROM ALL CAUSES (Proportionate Mortality).

1871-1880 .....	19.2	13.5	20.2	10.0	62.3	1.4	100.0
1881-1890 .....	14.1	12.7	23.2	9.4	59.4	2.0	100.0
1891-1900 .....	9.3	10.8	24.6	12.7	57.4	2.9	100.0
1901-1910 .....	8.6	10.6	21.8	12.0	53.0	4.3	100.0
1911-1920 .....	7.9	10.9	27.3	8.9	55.0	5.5	100.0
1921-1925 .....	7.0	11.2	25.8	7.0	50.9	7.9	100.0
1926 .....	6.1	10.7	24.1	8.2	49.2	8.5	100.0

Years.	Infective diseases (less Diarrhoea and Influenza).	Tubercular diseases	Respiratory diseases (including Influenza).	Digestive diseases (including Diarrhoea).	Total Deaths from Classes (a), (b), (c) & (d)	Cancer.	Total Deaths from all causes.
1871-1880 .....	5.2	3.6	5.7	2.8	17.4	0.4	28.5
1881-1890 .....	3.6	3.2	5.9	2.4	15.6	0.5	26.1
1891-1900 .....	2.2	2.7	5.9	3.0	13.8	0.7	23.9
1901-1910 .....	1.9	2.2	4.5	2.5	11.1	0.9	20.0
1911-1920 .....	1.35	1.90	4.73	1.59	9.8	1.0	18.1
1921-1925 .....	0.98	1.57	3.64	1.05	7.18	1.10	14.1
1926 .....	0.83	1.47	3.31	1.12	6.73	1.17	13.7
1927 .....	0.83	1.37	3.60	0.93	6.74	1.14	13.9
1928 .....	0.81	1.38	2.99	0.91	6.08	1.27	13.2

DEATH-RATES EXPRESSED AS A PERCENTAGE OF THE RATES EXPERIENCED IN 1871-1880 (Index Numbers).

1871-1880 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1881-1890 .....	69.0	88.0	104.0	85.7	89.1	125.0	91.0
1891-1900 .....	42.0	75.0	104.0	107.2	79.3	175.0	84.0
1901-1910 .....	36.0	61.0	79.0	89.3	64.3	225.0	70.0
1911-1920 .....	26.0	50.0	83.0	56.7	56.0	250.0	67.0
1921-1925 .....	18.8	43.3	63.8	37.5	41.3	275.0	49.5
1926 .....	15.9	40.8	48.0	40.0	38.5	286.5	48.0
1927 .....	15.9	38.0	63.1	33.2	38.8	285.0	48.8
1928 .....	15.6	38.4	52.5	32.4	34.9	317.5	46.2

TABLE SHOWING THE ANNUAL RATE OF MORTALITY PER 1,000 AS WELL AS THE TOTAL NUMBER OF DEATHS AT EACH OF TWELVE AGE-PERIODS DURING THE YEAR 1928 IN LIVERPOOL.

1928.	Under 1 year.	1 to 2	2 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 and up- wards.	Total at all Ages.
Rate of Mortality per 1,000 living at ages indicated.	* 94.0	28.9	8.7	2.3	2.5	4.1	4.8	8.9	19.6	43.6	109.3	213.4	13.2
Total Number of Deaths at each Age-Period.	1789	644	394	206	439	573	607	989	1441	1820	1837	693	11432
Approximate Population	21172	22304	45149	90442	173761	141031	125925	110717	73727	41714	16811	3247	866000

\* Column I. indicates the rate of mortality under one year per 1,000 births during the year.

### DEATHS IN PUBLIC INSTITUTIONS.

In Liverpool the number of deaths which take place in Public Institutions is large, and this tends to show the proportion of people who in times of sickness have recourse to public and charitable institutions in the city, and no doubt also suggests that the institutions have a wide reputation and attract sufferers not only from within the city, but from a distance, as shown by the number of non-resident deaths.

The deaths in institutions during the year numbered 6,195, and included 908 persons who were non-residents in the city area. The number of deaths in the various institutions are shown in the following table :—

					Total Deaths.	Deaths of non-residents.
Parish Institution (Brownlow Hill)	...	...	...	...	15	1
Mill Road Infirmary	...	...	...	...	822	44
Walton Institution (Rice Lane)	...	...	...	...	1,481	294
Toxteth Institution (Smithdown Road)	...	...	...	...	819	31
Alder Hey Hospital	...	...	...	...	744	83
Belmont Road Institution	...	...	...	...	264	34
Kirkdale Homes	...	...	...	...	190	23
Royal Infirmary	...	...	...	...	349	112
David Lewis Northern Hospital	...	...	...	...	260	93
Royal Southern Hospital	...	...	...	...	193	27
Stanley Hospital	...	...	...	...	97	19
Royal Liverpool Children's Hospital	...	...	...	...	173	35
Maternity Hospital	...	...	...	...	64	7
Hospital for Women	...	...	...	...	16	10
Samaritan Hospital	...	...	...	...	5	—
Consumption Hospital	...	...	...	...	35	18
Carried forward					5 527	831

					Total Deaths.	Deaths of non-residents.
Brought forward ...					5,527	831
Hahnemann Hospital	...	...	...	...	18	4
Eye and Ear Infirmary	...	...	...	...	16	10
Garston Hospital	...	...	...	...	11	1
City Hospital North	...	...	...	...	6	1
Do. South	...	...	...	...	25	—
Do. East, Mill Lane	...	...	...	...	72	2
Do. Fazakerley	...	...	...	...	130	8
Do. do. Annexe	...	...	...	...	30	1
Do. Sparrow Hall	...	...	...	...	1	—
Sanatorium Fazakerley	...	...	...	...	64	1
Do. Broad Green	...	...	...	...	151	1
St. Joseph's Home	...	...	...	...	32	10
Home for Incurables	...	...	...	...	6	2
House of Providence	...	...	...	...	7	4
Tuebrook Villa Asylum	...	...	...	...	6	3
Turner Memorial Home	...	...	...	...	4	3
St. Augustine's Home	...	...	...	...	8	3
H.M. Prison, Walton	...	...	...	...	1	—
Other Institutions	...	...	...	...	80	23
					<hr/>	<hr/>
					6,195	908
					<hr/>	<hr/>

of the above deaths 4,335 took place in poor-law institutions, 1,237 in voluntary hospitals, 479 in city hospitals, and 144 in other institutions.

## INFECTIOUS SICKNESS.

Liverpool is closely associated with all parts of the world by reason of the large volume of shipping continually arriving in the port, and in consequence the City is peculiarly liable to the importation of various forms of infectious disease. The measures which have been adopted have been successful in preventing any outbreaks of a serious nature obtaining a footing in the City.

The following table shows the number of cases of infectious disease notified during 1928 the case-rate per 1,000 of the population, the number of deaths registered from these diseases, the death rates per 100,000 of the population, and the percentage proportion of deaths to cases.

	Smallpox.	Enteric Fever.	Scarlet Fever.	Measles.	Diphtheria.	Puerperal Fever.	Erysipelas.	Cerebro-spinal Fever.	Poliomyelitis and Polioencephalitis.	Encephalitis Lethargica.	Malaria	Whooping Cough.
.....	2	30	2,193	6,025	1,902	51	623	21	6	54	77	2,313
per 1,000 ...	—	0·03	2·53	6·96	2·20	2·7†	0·72	0·02	0·01	0·06	0·09	2·67
.....	—	4	19	177	100	19	22	16	5	24	5	269
te per 100,000	—	0·35	2·2	20·4	11·5	99*	2·5	1·8	0·57	2·8	0·57	31·1
ge of Deaths es	—	13·3	0·87	2·9	5·3	37·2	3·5	86·2	83·3	44·4	6·5	11·6

Death rate per 100,000 Births.

† Case rate per 1,000 Births

PLAGUE.

No cases of plague occurred in the city during the year.

SMALLPOX.

There were two cases of smallpox in the city during the year. The first patient developed illness on January 4th, and on the 7th visited a doctor's surgery, when immediate notification of the case was given to the Health Authorities, who confirmed the diagnosis. The infection was probably derived from the patient's brother, who was unvaccinated, and returned on December 3rd from Durham Gaol. All contacts in the house were vaccinated, and notifications of the illness sent to the districts where contacts were likely to develop the disease. No further developments occurred.

The second Liverpool case was in the person of a child living in a Gipsy caravan in Fazakerley. The onset was ill-defined, but there was a definite smallpox rash on March 4th, the disease being of the prevalent type, but more severe than the average on account of the unvaccinated condition of the child. The family had been in lodgings in Shoreditch, Newcastle-under-Lyme, about January 14th, and then left for Crewe about January 28th; on February 13th a case of smallpox occurred at Shoreditch, Newcastle-under-Lyme. On examination of all the contacts of this case, it was found that an adult male living in the caravan showed evidence of having recently had smallpox and recovered. The necessary links in this case were therefore discovered. Vaccination and re-vaccination of 40 contacts were carried out, and the usual precautions taken. The Medical Officers of Health of all the neighbouring areas were notified of the occurrence of infection amongst gipsies. No further cases were discovered.

The following figures shew a gradual and remarkable spread of an exceedingly mild type of smallpox, only a few deaths occurring amongst the thousands of cases reported. There has been a considerable reduction in the number of cases during 1928.

Year.			Cases.			Deaths.
1924	...	...	3,792	...		13
1925	...	...	5,365	...		9
1926	...	...	10,205	...		19
1927	...	...	14,769	...		49
1928	...	...	12,433	...		53

(Extracted from the Registrar General's Quarterly Returns.)

The striking increase in the disease may be attributed to the general neglect of vaccination in the invaded districts. It may be appropriate to urge that the only safeguard against infection is vaccination and re-vaccination.

On account of its world-wide trade, Liverpool must always be one of the channels through which the severe types of smallpox may be imported. Furthermore, the constantly moving population—inwards and outwards—renders the city particularly liable to infection.

In Liverpool, however, the child population is relatively well vaccinated, as the most recent available figure for 1927 shows that 81 per cent. of the children born in Liverpool have been successfully vaccinated. This is satisfactory when compared with the rest of the country, and reflects credit on the public vaccinators and others concerned in the administration of the Vaccination Acts.

The appended figures show the primary vaccinations during the last five years in the city of Liverpool :—

	1923.	1924.	1925.	1926.	1927.
1.—No. of Children born ...	20,695	20,559	19,592	19,792	19,020
2.—No. of primary vaccinations ... ..	15,537	15,246	13,976	14,091	15,572
3.—No. of Exemption Certificates granted ... ..	1,360	1,263	1,408	1,394	1,296
4.—No. of Certificates of insusceptibility sent ...	192	125	111	123	102

These figures have been kindly supplied by the Clerk to the West Derby Union.

### TYPHUS FEVER.

No case occurred in Liverpool during 1928, and no indigenous cases have occurred during the course of the past ten years.

### ANTHRAX.

During the year 1928 there were eight cases of cutaneous anthrax infection admitted to the Liverpool hospitals; seven of these resided in Liverpool and one was admitted from Runcorn district; two of the patients died.

Four of the cases were dock or other labourers engaged in handling hides, wool, etc., on the docks, usually during the unloading of vessels, one being a motor driver who assisted in the transport of these products. East African, Abyssinian or China hides were mostly inculpated.

Amongst the wool industry there was only one case, that of a female employee, whose business it was to handle East Indian wool, which she blended in a machine to remove dirt and to tease the wool; she recovered after a severe illness. Two further cases occurred amongst tanners' labourers.

Favourable reports on the results of serum treatment are now being obtained at the City Hospital, Fazakerley (see page 145), where cases come under observation soon after infection and the diagnosis can be promptly verified. It is, therefore, the wish of the Health Authorities that cases or suspected cases of Anthrax be sent without delay to this hospital for admission, when the necessary steps will be taken to diagnose the illness and place the patient under serum treatment. In the cases under review, all, except the two who died, were treated early with serum and recovered. Of the two who died, one was admitted into a Liverpool hospital, was undiagnosed until too late, and received no serum, whilst the second patient who died attended at two hospitals, and largely owing to his own neglect, was not admitted to Fazakerley Hospital until late in his illness. He was then in a serious toxic condition and died on the day of admission. The fatal result was probably the patient's own fault, as he refused to remain in one hospital when advised to do so.

The fatal cases quoted emphasise the importance of early diagnosis and serum treatment in all cases of this disease.

The appended table shows the incidence of anthrax cases in the United Kingdom as reported to the Chief Inspector of Factories, under Section 73 of the Factory and Workshop Act, 1891 :—

TABLE GIVING PARTICULARS OF THE INCIDENCE OF ANTHRAX CASES IN THE UNITED KINGDOM, NOTIFIED TO THE CHIEF INSPECTOR OF FACTORIES. UNDER SECTION 73 OF THE FACTORY AND WORKSHOP ACT, 1901.

ANTHRAX.	AVERAGE.										
	1927	1926	1925	1924	1921 to 1923	1918 to 1920	1915 to 1917	1912 to 1914	1909 to 1911	1906 to 1908	1903 to 1905
Cases Notified .....	*31-(2)	38-(3)	45-(9)	43-(4)	39-(5)	59-(9)	83-(12)	57-(7)	57-(11)	57-(13)	52-(13)
Wool .....	18-(1)	15-(2)	25-(4)	19-(1)	15-(2)	37-(6)	54-(7)	33-(5)	30-(5)	22-(5)	22-(6)
Horsehair .....	3-(1)	8-(1)	3-(2)	4-(1)	7-(1)	4-(1)	4-(1)	6	7-(1)	12-(3)	9-(2)
Hides and Skins ...	9	12	16-(3)	16-(2)	15-(1)	16-(2)	22-(3)	14-(1)	17-(3)	15-(3)	16-(3)
Other Industries....	1	3	1	4	1-(1)	2-(1)	3-(1)	4	2-(1)	9-(3)	6-(3)

Extracted from Annual Reports of the Chief Inspector of Factories for the years 1926 and 1927.

\*The principal figures relate to cases. The bracketed figures relate to deaths.

The business firms connected with the hide and skin trade in Liverpool and neighbourhood have recognised the importance of the points above enumerated in regard to early diagnosis and serum treatment, and have conferred with the Liverpool Health Authorities with the object of taking further measures to educate the workers as to the risks involved in handling goods of animal origin, particularly hides and skins.

A poster has been printed on the subject and will be affixed in suitable places. A pocket card has also been issued containing full information regarding the appearance and symptoms of cutaneous anthrax and advice on the action to be taken.

Arrangements were also made to admit all cases of anthrax or suspected anthrax direct to Fazakerley hospital.

The question of the disinfection of hides and skins is still under consideration, but there are difficulties in evolving a method which will be successful, not only in destroying the anthrax spore without damaging the material, but one which can be utilised on a commercial scale.

The disinfection of dangerous wools at the Government Wool Disinfection Station, Love Lane, is still in progress, and the Liverpool Health Authorities assist by having samples of the untreated wools and those which have passed through the disinfecting process, examined by the City Bacteriologist; this helps to confirm and control the Duckering disinfecting process. During the year, 102 samples were examined after disinfection, and all were found to be free from anthrax.

### ENTERIC FEVER.

The decline in the prevalence of this disease which has been continuous for the past 30 years has now almost led to its extinction. The death rate has fallen since 1894 from 46 to 0·35 per 100,000; of the four deaths which occurred in the year, one was that of a seaman, and in another case the sufferer was infected whilst on a holiday. One of the deaths was from Paratyphoid B. infection.

Forty cases of Enteric Fever (including two cases of Paratyphoid A. and four cases of Paratyphoid B.) were reported during 1928 in the city and port of Liverpool. Of these, 11 were imported from overseas, leaving 29 of indigenous origin, as against 66 in the preceding year. In the case of two of the indigenous cases the development of illness followed the consumption of shellfish (cockles in both instances). Four persons were infected whilst away on holidays or otherwise.

During September three cases were reported in one family; the father of this family had died a few days before from an illness which, although not recognised as such, was probably typhoid, and one of the daughters was found to be convalescent from an attack. One, a nurse, was infected in the course of her duties.

The results of inquiry into the probable causation of the reported cases is shown in the following table, the figures for the years 1923 to 1928 being shown for the purpose of comparison :—

CITY AND PORT OF LIVERPOOL. ENTERIC FEVER, 1923-28.

	CASES.						PERCENTAGE.					
	1923.	1924.	1925.	1926.	1927.	1928.	1923.	1924.	1925.	1926.	1927.	1928.
... .. by sea ...	5	12	14	12	14	11	25·0	20·0	29·2	24·0	17·5	27·5
... .. by land ...	—	8	3	3	2	4	—	13·3	6·2	6·0	2·5	10·0
... .. h ... ..	2	3	1	1	6	2	10·0	5·0	2·1	2·0	7·5	5·0
... .. nfection ...	1	7	9	7	11	3	5·0	11·7	18·7	14·0	13·7	7·5
... .. nfection from ... .. d cases ...	2	2	1	1	4	1	10·0	3·3	2·1	2·0	5·0	2·5
... .. o carrier ...	—	—	—	—	1	—	—	—	—	—	1·2	—
... .. y not Typhoid	1	1	—	—	—	—	5·0	1·7	—	—	—	—
... .. h which source ... .. ascertained ...	11	33	28	24	38	21	55·0	55·0	58·4	48·0	47·5	52·5
... .. area ... ..	3	7	10	7	17	6	15·0	11·7	20·8	14·0	21·2	15·5
... .. rea ... ..	6	20	10	19	25	13	30·0	33·3	20·8	38·0	31·2	32·5
... .. h which sources ... .. ot ascertained	9	27	20	26	42	19	45·0	45·0	41·6	52·0	52·5	47·5
... .. r City and Port	20	60	48	50	80	40						
... .. n due to B. ... .. psus ... ..	17	36	43	37	60	34	85·0	60·0	89·5	74·0	75·0	85·0
... .. typhosus B ...	3	24	3	12	19	4	15·0	40·0	6·2	24·0	23·8	10·0
... .. typhosus A ...	—	—	2	1	1	2	—	—	4·2	2·0	1·2	5·0

### DIPHTHERIA.

During 1928 1,902 cases of Diphtheria were reported, giving an attack rate of 2·20 per 1,000 of the population. Of these cases 100 proved fatal, making a fatality rate of 5·3 per 100 cases, and a mortality rate of 11·5 per 100,000 population. Although the case-rate shows increase above the rates of the past seven years, the fatality rate and so the number of deaths remains low. The fatality rate is the lowest so far recorded in this city.

Table 1.

#### DIPHTHERIA IN THE CITY OF LIVERPOOL, 1919-1928

	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Cases .. ...	1,959	1,654	1,182	953	993	1,105	1,504	1,519	1,664	1,002
Deaths ... ..	212	188	97	91	87	71	106	112	90	100
Case rate per 1,000 population ...	2·5	2·1	1·4	1·2	1·2	1·3	1·8	1·79	1·94	2·20
Death rate per 100,000 population	26·3	23·2	12·0	11·5	10·5	8·5	12·6	13·2	10·5	11·5
Fatality rate per 100 cases ... ..	10·8	11·4	8·2	9·5	8·8	6·4	7·0	7·4	5·4	5·3

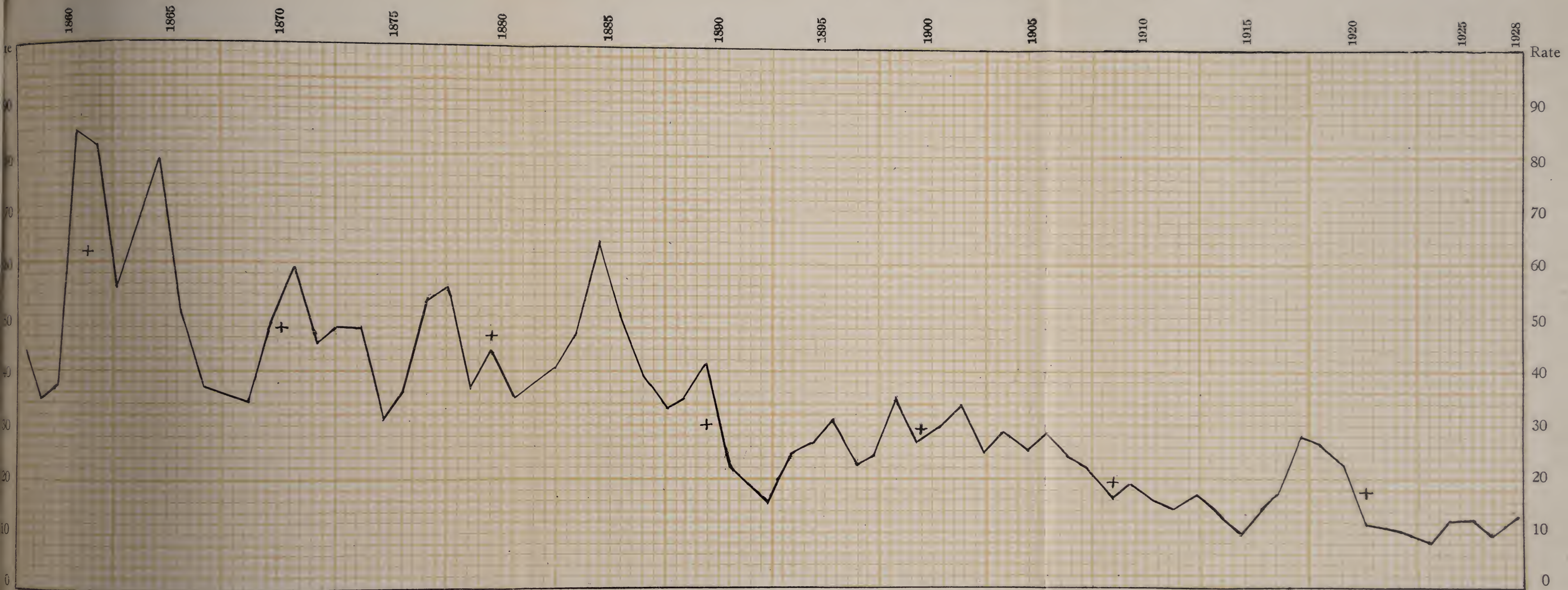
The accompanying graphs show the great decline in the mortality and fatality of this disease during the period for which records for the City of Liverpool exist. Prior to 1857 there were no records of the deaths from diphtheria, the heading croup presumably containing all the deaths from this disease; from 1858 onwards the term diphtheria has steadily replaced croup as a certified cause of death, and the first graph accordingly gives the combined death rates from these two headings.

It will be observed that prior to 1890 severe epidemics of diphtheria occurred at intervals of four to seven years.

In 1890 diphtheria and membranous croup were made notifiable.

# CITY OF LIVERPOOL.

DEATH-RATE FROM DIPHTHERIA (INCLUDING CROUP) PER 100,000 POPULATION 1858-1928.



The crosses indicate the average mortality of the decade centred round the cross: a line joining the crosses indicates the descending trend of this disease.

# CITY OF LIVERPOOL

1840-1841 (Liverpool) (Population 100,000)

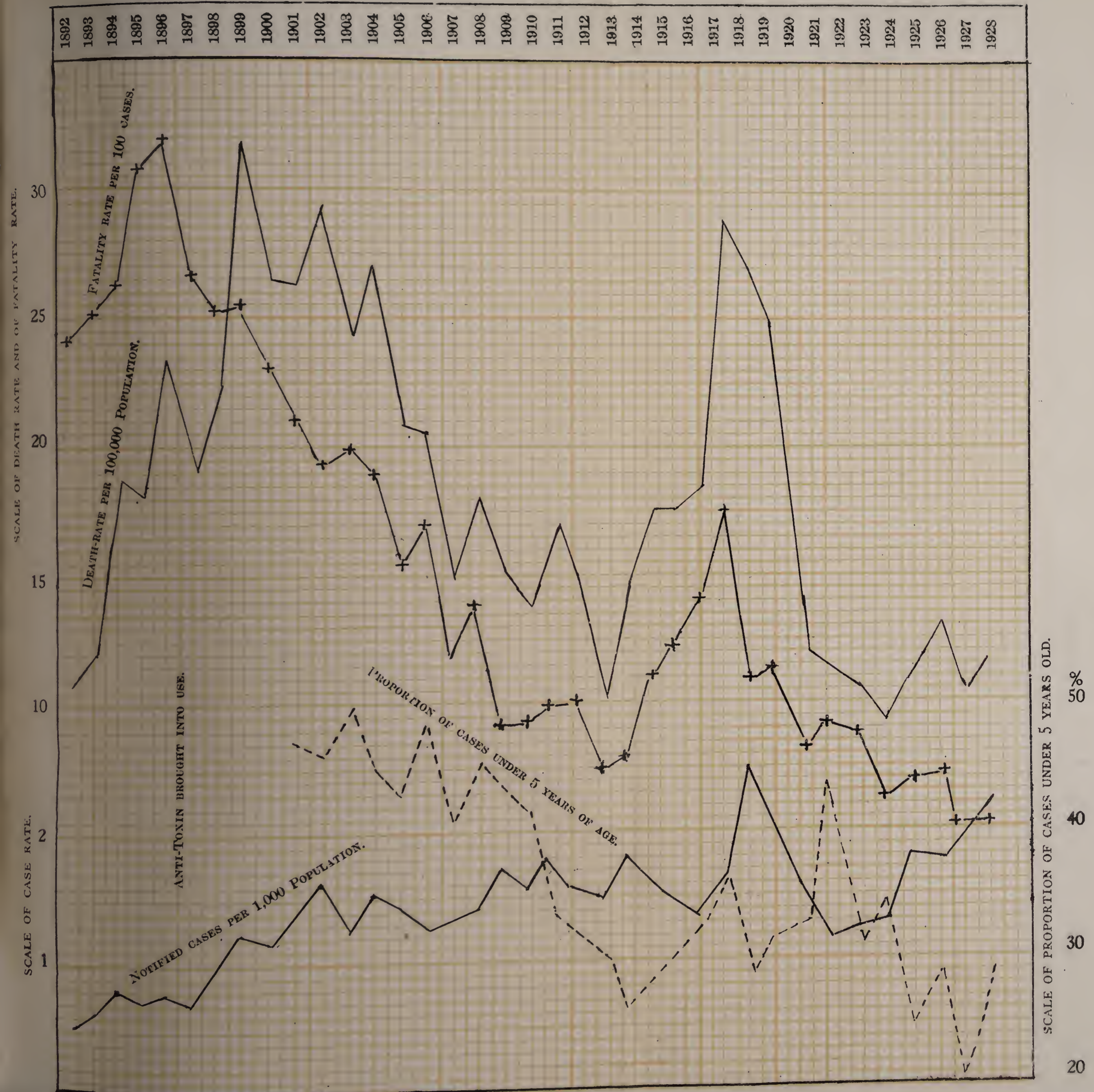


1840-1841 (Liverpool) (Population 100,000)

# DIPHTHERIA (& MEMBRANOUS CROUP IN CITY OF LIVERPOOL DURING 1892—1928.

DEATH RATE PER 100,000 POPULATION, NOTIFIED CASES PER 1,000 POPULATION, FATALITY RATE PER 100.

CASES NOTIFIED AND PROPORTION OF CASES UNDER 5 YEARS OF AGE TO TOTAL CASES.



DEATH RATE PER 100,000 POPULATION, NOTIFIED CASES BY  
 CASES NOTIFIED AND PROPORTION OF CASES UNDER

1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921



In 1895 treatment by anti-toxin was introduced during a rising wave of prevalence of diphtheria, and the fatality rate fell steadily from 1896 onwards till 1913, as the value of this method of treatment became more recognised.

During the years of the war the prevalence, incidence upon young children, and fatality—and therefore the mortality also—rose, reaching a maximum in 1918-1919; there was a slight tendency to increased prevalence and mortality during 1925 and 1926, but the fatality remained low, being 5·3 per cent. in 1928, the lowest ever recorded in the city. The length of time elapsing between one epidemic and the next has been increased and the height of the epidemic wave also greatly diminished.

Since 1920 observations have been made to determine with greater exactitude facts of the distribution of these diseases in the different parts of the City; for this purpose the City was divided into three zones :—(I.) Central, comprising Exchange and Abercromby; (II.) middle, comprising Everton, Kirkdale, Edge Hill, Toxteth and Walton, and (III.) outer, comprising the suburban areas of West Derby East, Wavertree, Sefton Park, Fazakerley and Woolton. Examination of Table 2 shows the following points :—

(1) The incidence or case-rate is persistently higher in the outer than in the middle or central parts of the city. This is almost certainly due to a larger proportion of cases of a mild character receiving adequate medical attention in the outer districts. In other words a low case-rate, in this case, indicates incomplete notification of the disease. It is probable that the increase of the case-rate affecting the whole of the city during the past 35 years is due to similar causes.

(2) The death rate has, on the whole, been highest in the central districts during the past eight years, 1921-28.

Table 2.

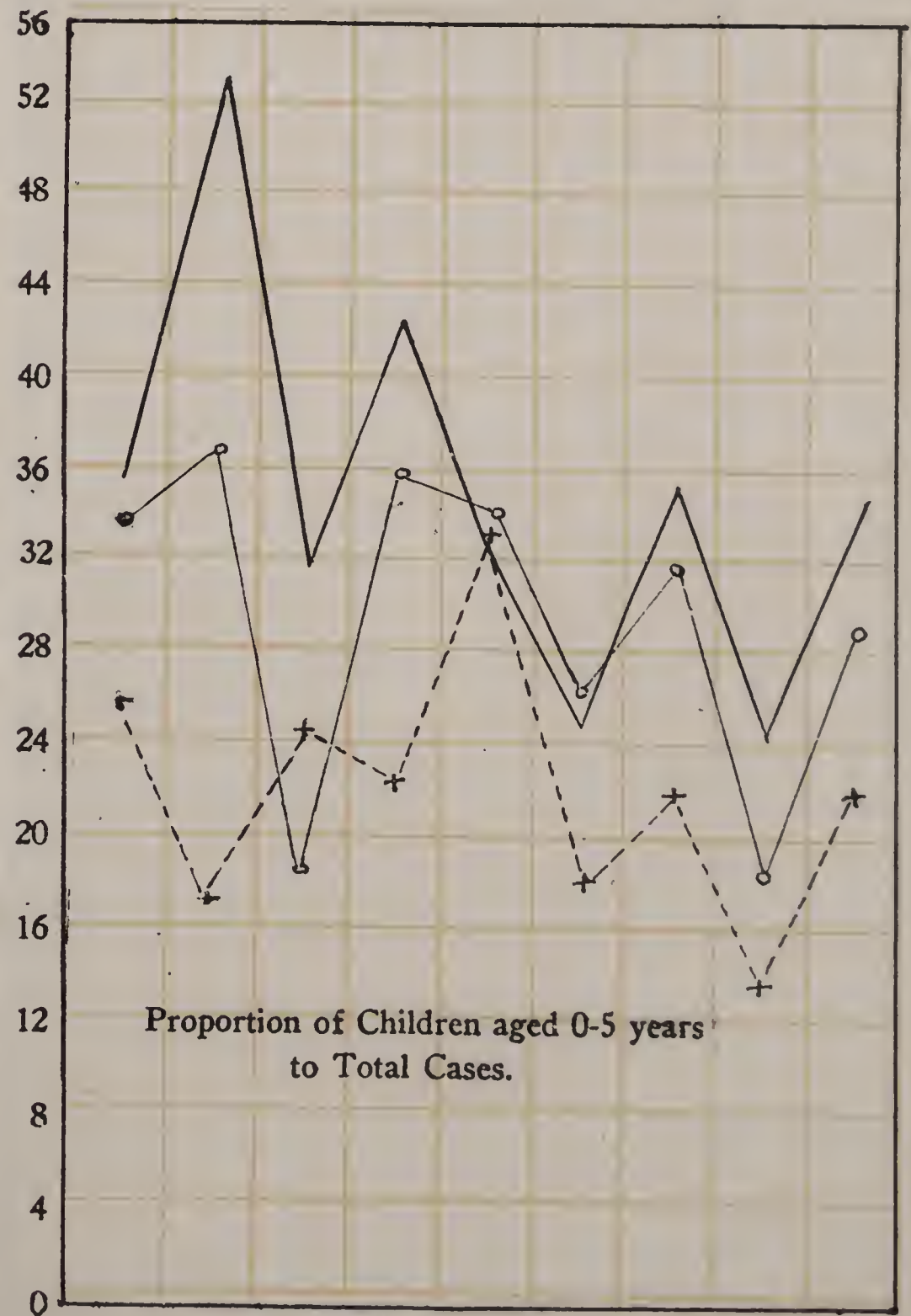
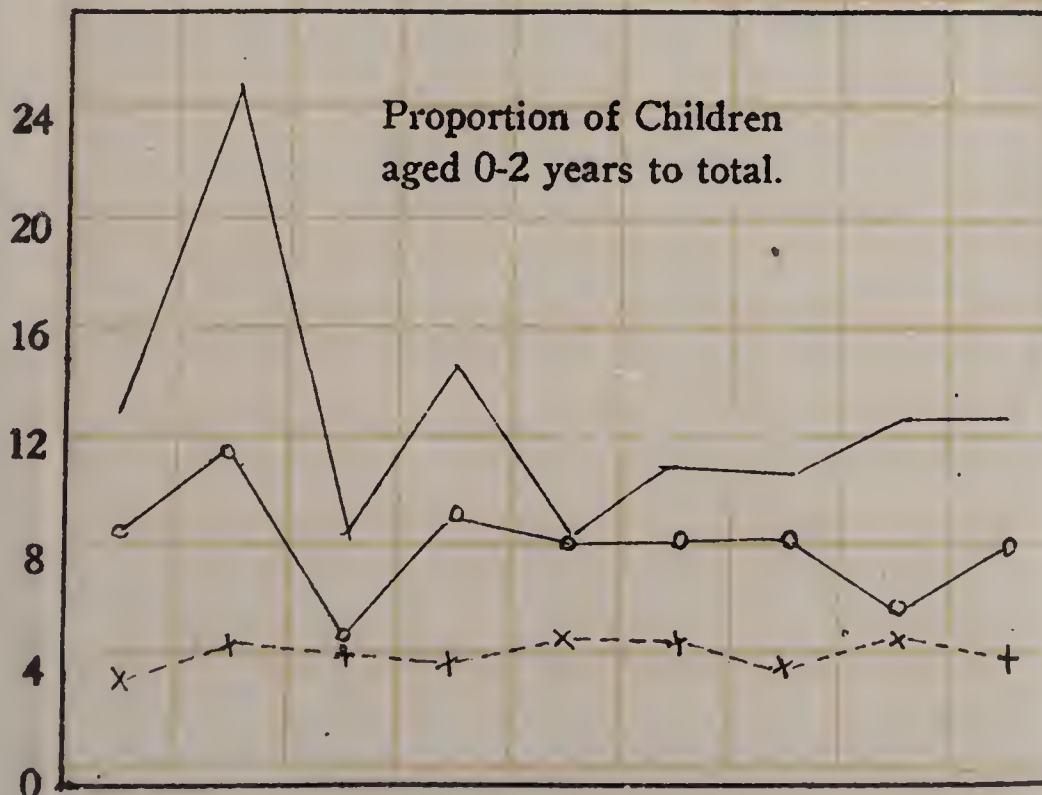
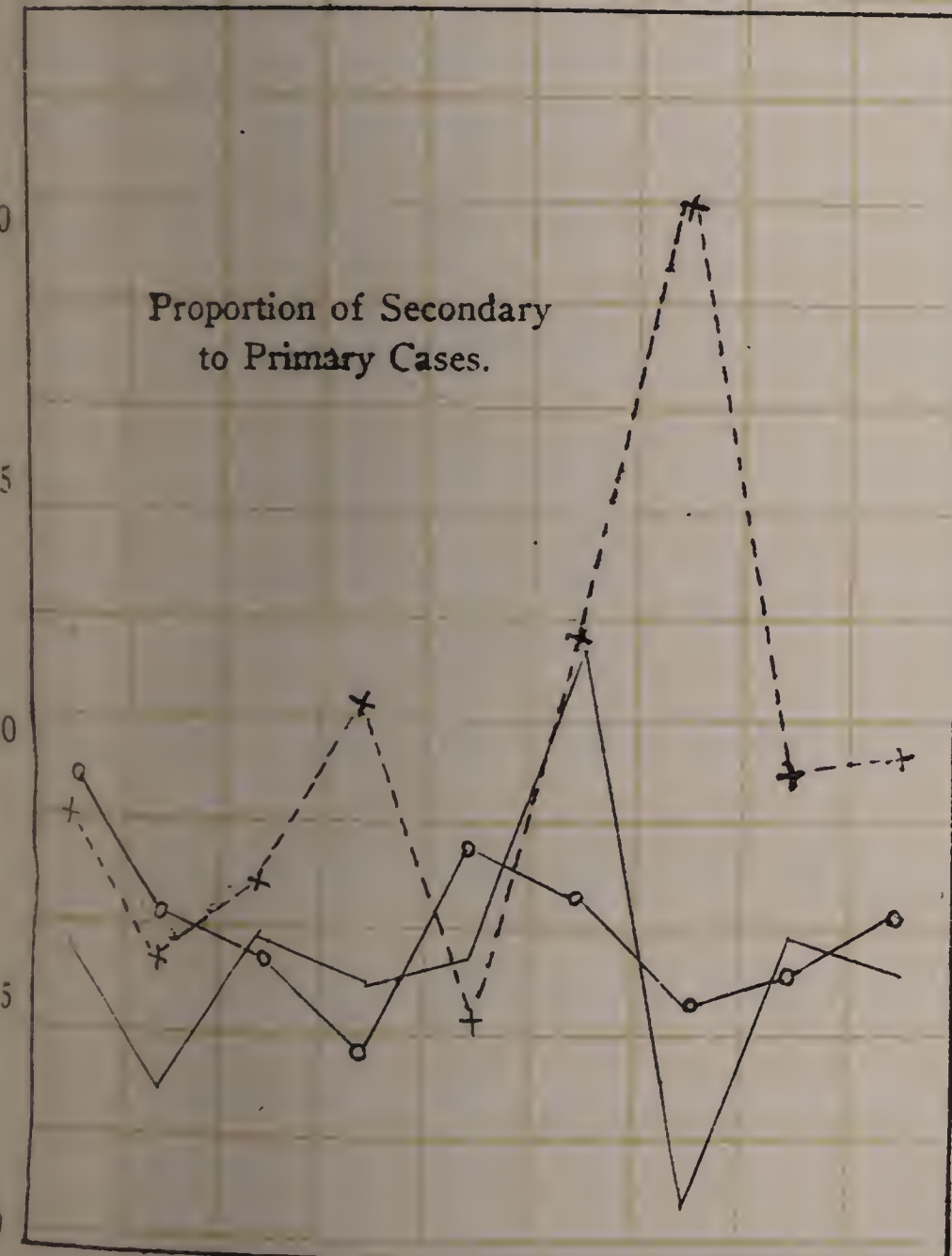
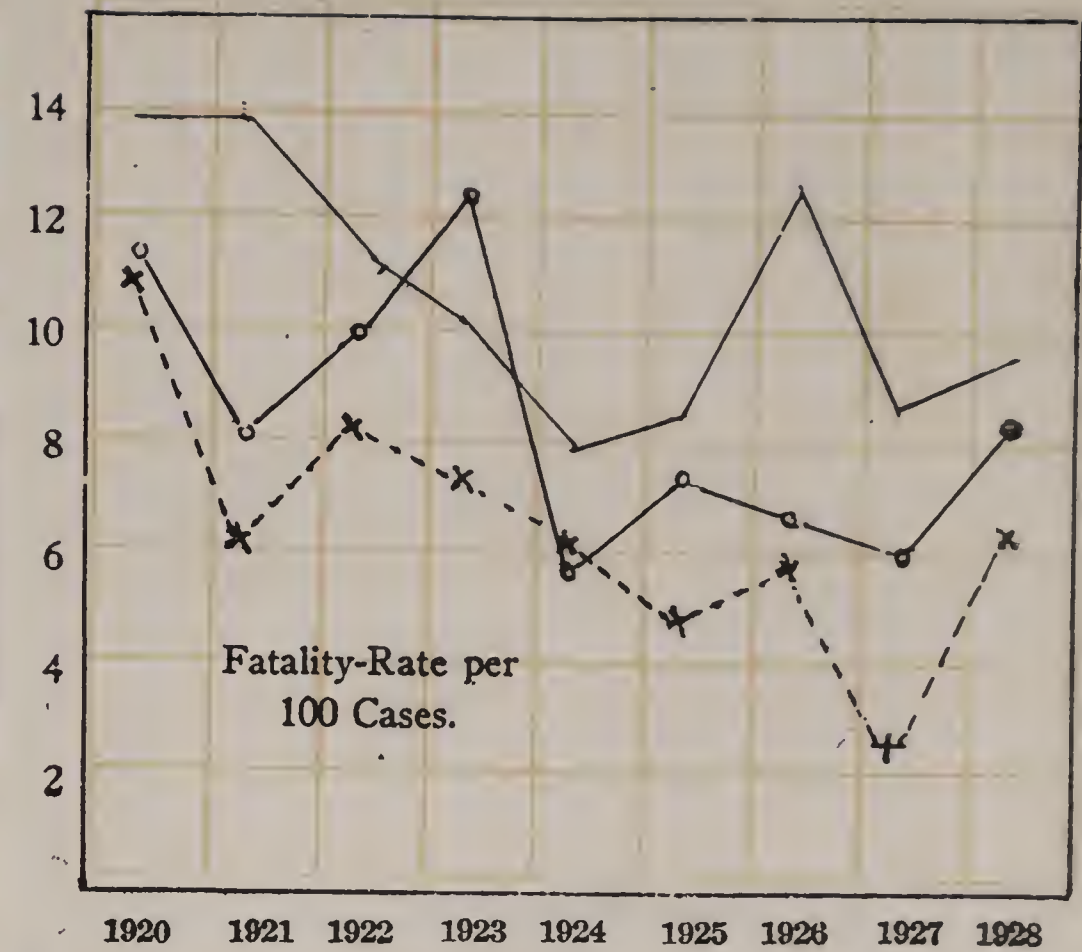
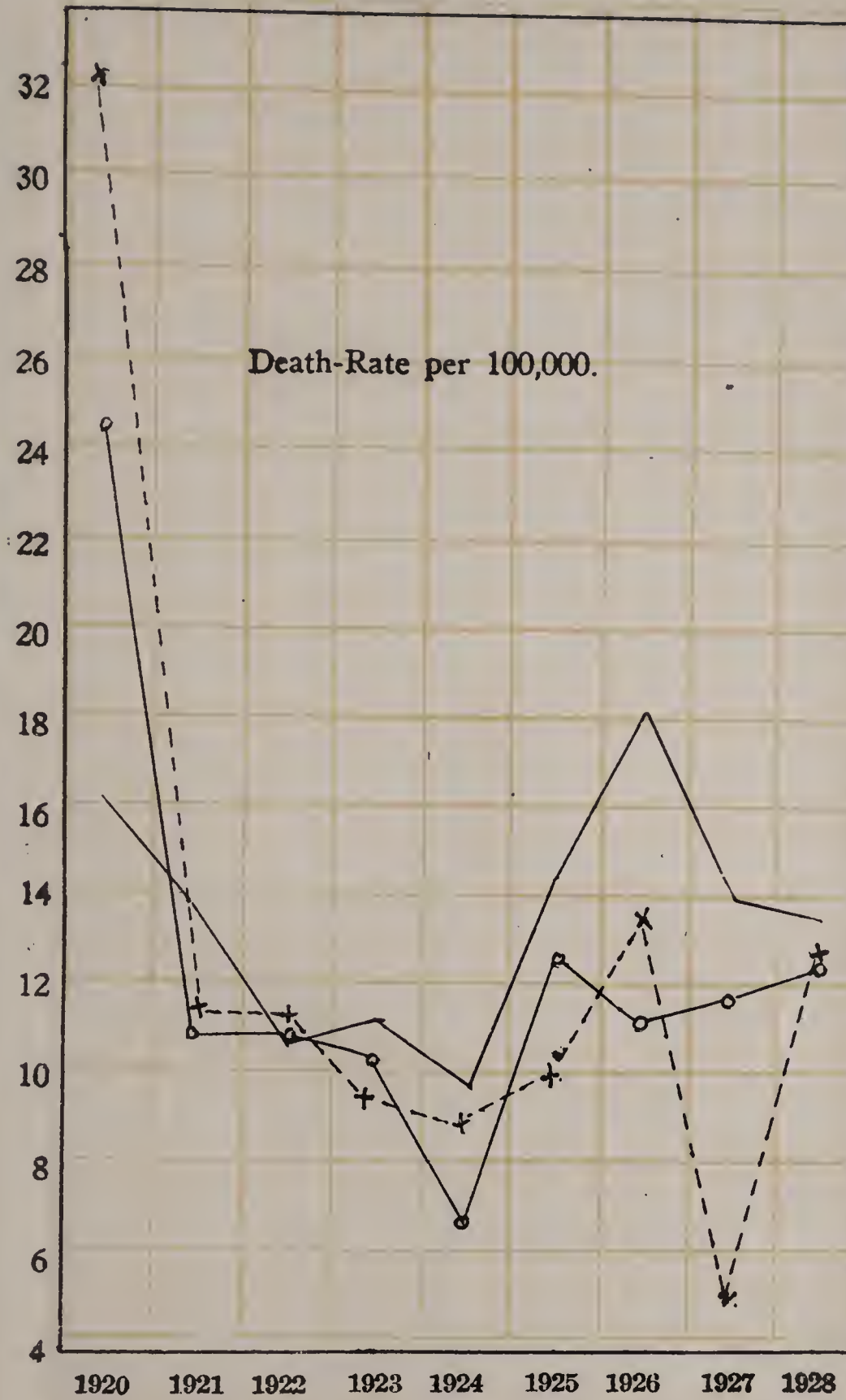
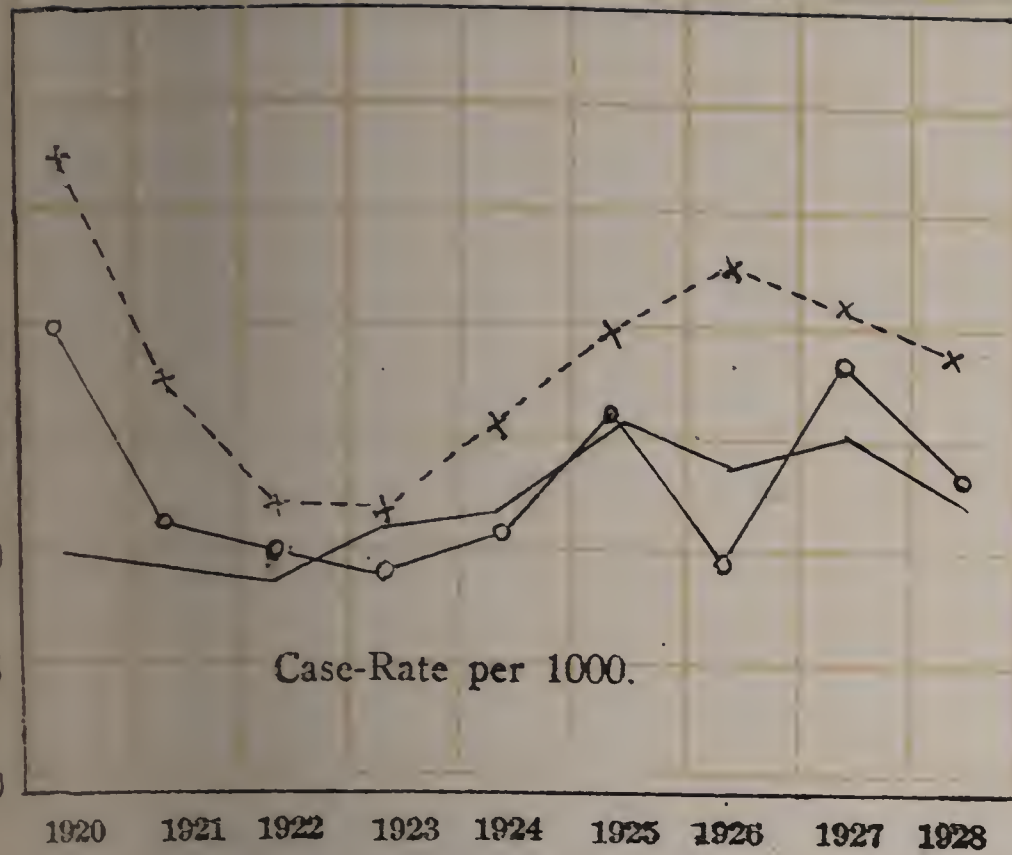
CITY OF LIVERPOOL.—DIPHTHERIA, 1924-28.

Districts	Case Rates per 1,000 population.					Death Rates per 100,000 population.					Fatality Rates.				
	1924	1925	1926	1927	1928	1924	1925	1926	1927	1928	1924	1925	1926	1927	1928
Central (1-2)	1.24	1.67	1.43	1.57	1.92	10.0	14.6	18.3	14.2	11.8	8.0	8.7	12.8	8.9	4.3
Middle (3-7)	1.21	1.68	1.05	1.90	2.09	7.2	13.0	11.5	12.0	10.9	6.0	7.7	7.0	6.3	5.2
Outer (8-12)	1.63	2.06	2.30	2.23	2.50	9.2	10.3	13.9	5.4	12.5	6.4	5.0	6.0	2.5	5.0
Whole City	1.32	1.78	1.77	1.94	2.20	10.5	12.5	13.2	10.5	10.4	6.4	7.0	7.4	5.4	5.27

Districts	Percentage Proportion of Secondary to Primary Cases.					Percentage Proportion of Children 0-2 years old to Total cases.					Percentage Proportion of Children 0-5 years old to Total cases.				
	1924	1925	1926	1927	1928	1924	1925	1926	1927	1928	1924	1925	1926	1927	1928
Central (1-2)	5.8	11.5	0.6	6.3	2.1	9.2	11.5	11.2	13.4	6.1	32.7	25.4	35.8	25.4	33.0
Middle (3-7)	7.9	7.0	5.0	5.5	6.5	9.3	8.8	9.2	6.7	5.2	34.7	27.0	32.5	19.2	33.6
Outer (8-12)	4.8	11.6	20.2	9.3	10.4	5.6	5.4	4.5	5.7	4.3	33.7	18.7	22.6	14.6	19.2
Whole City	7.5	10.5	11.9	9.9	10.4	8.1	8.2	7.8	7.2	5.0	34.1	24.4	29.6	18.5	29.0

# CITY OF LIVERPOOL.

DIPHTHERIA 1920-28.

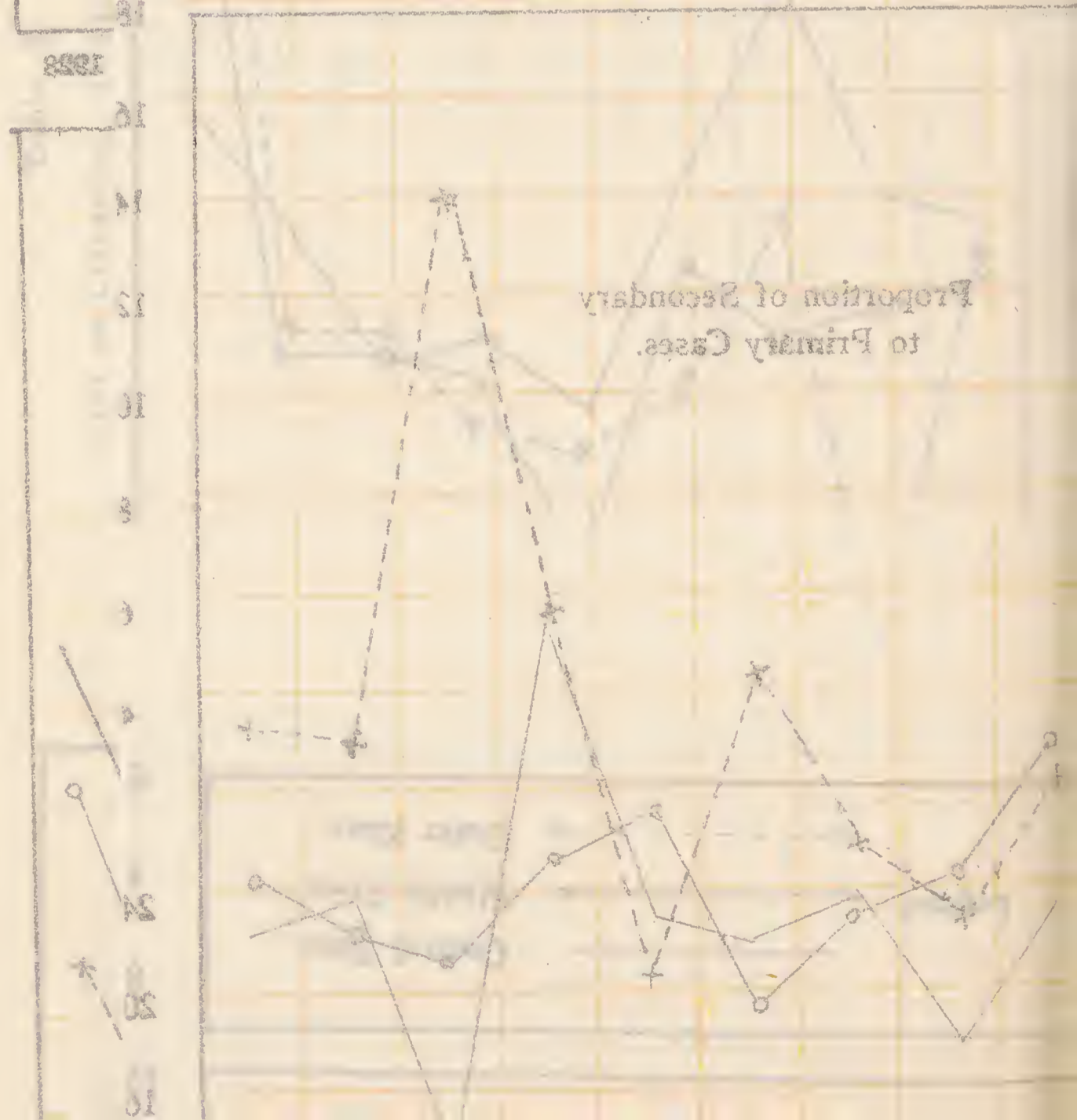
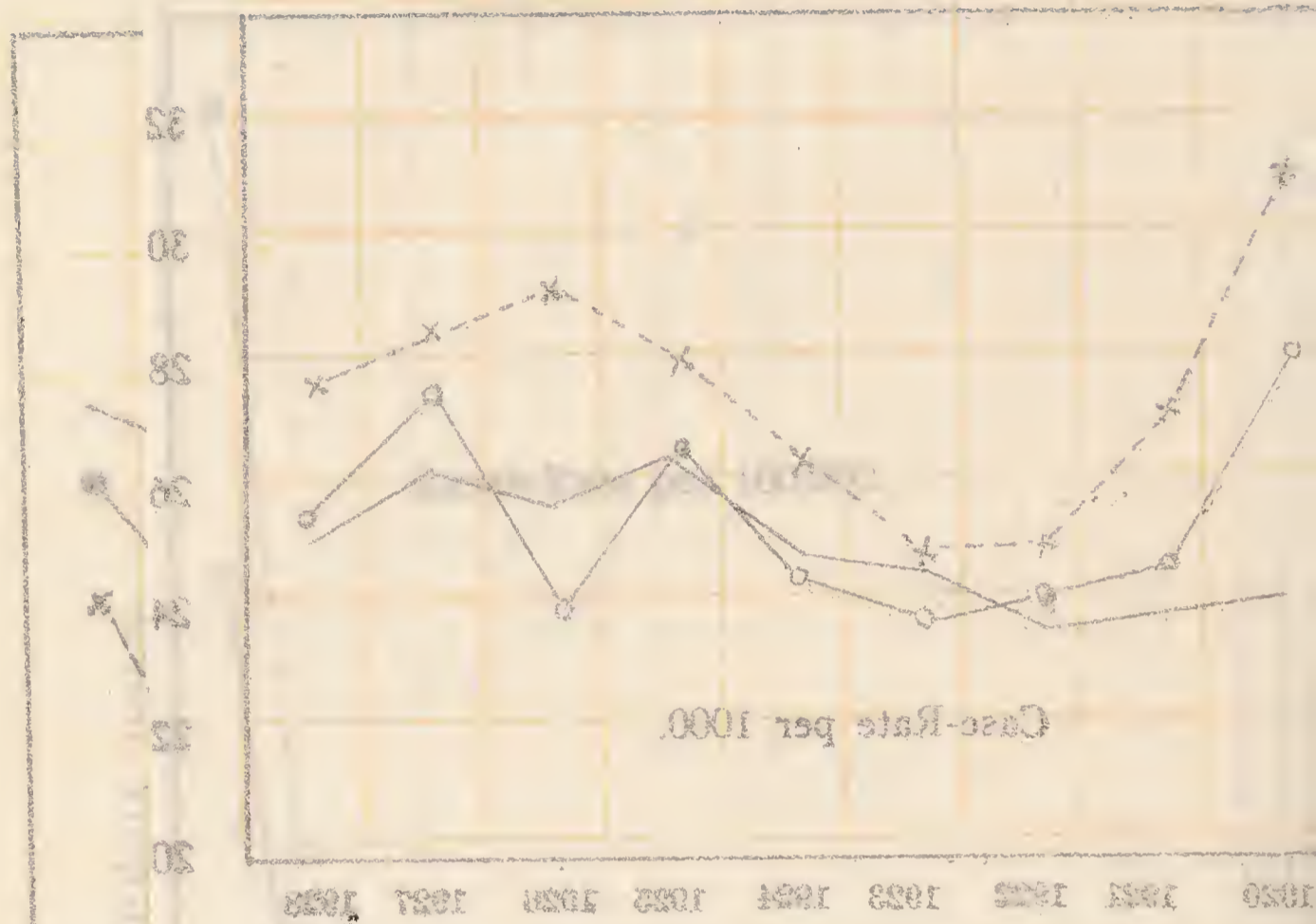


Legend

—	Central Zone.
—○—	Middle Zone.
-x--x--x-	Outer Zone.

# CITY OF LIVERPOOL

REPORT ON THE



## DIPHTHERIA, YEAR 1928.

25

District.	Estimated Population, 1928.	Cases.	Deaths.	Attack Rate per 1,000.	Death Rate per 100,000.	Case Fatality Rate %.	Percentage Proportion of Secondary to Primary Cases. *	Percentage Proportion of Children 0-2 years to Total Cases.	Percentage Proportion of Children 0-5 years to Total Cases.
1. Exchange .....	82,359	141	11	1.7	13.4	7.8	2.8	6.4	51.4
2. Abereromby .....	45,002	104	4	2.3	8.9	3.8	2.2	5.8	21.1
3. Everton .....	116,773	260	10	2.2	8.6	3.8	5.8	3.1	35.0
4. Kirkdale .....	64,181	131	7	2.0	10.9	5.3	2.2	13.0	52.6
5. Edge Hill .....	91,551	146	10	1.6	10.9	6.8	7.7	9.6	50.0
6. Toxteth .....	103,284	204	10	2.0	9.7	4.9	5.3	3.4	21.0
7. Walton.....	90,571	235	14	2.6	15.5	6.0	9.2	2.1	24.7
8. West Derby East .....	97,175	316	26	3.2	26.7	8.2	9.7	3.1	16.7
9. Wavertree .....	94,310	233	7	2.5	7.4	3.0	8.6	3.9	24.0
10. Toxteth E. (Sefton P.)	30,638	42	1	13.7	3.3	2.4	10.6	5.2	11.9
11. Fazakerley .....	42,850	62	...	1.5	...	...	19.3	11.1	21.0
12. Woolton .....	7,306	28	...	3.8	...	...	6.0	7.1	14.4
Central Districts (1 to 2) ...	127,361	245	15	1.92	11.8	4.3	2.1	6.1	33.0
Middle Districts (3 to 7) ...	466,360	976	51	2.09	10.9	5.2	6.5	5.2	33.6
Outer Districts (8 to 12) ...	272,279	681	34	2.50	12.5	5.0	10.4	4.3	19.2
Whole City .....	866,000	1,902	100	2.20	11.5	5.27	10.4	5.0	29.0

\* Cases are those with onset in 1927.

(3) The fatality rates are persistently higher in the central than in the middle, with the exception of the year 1923, and in the middle than in the outer districts.

(4) This higher rate of fatality coincides with the age distribution of the cases in the three zones. The proportion of children under two years and under five years (the ages when the disease is especially fatal) is also, on the whole, higher in the central than in the middle, and in the middle than in the outer zone. The variations in case rates and in the proportion of young children are sufficient to account for the variations in fatality.

(5) The proportion of secondary to primary cases—that is the proportion of second and further cases in a house to first cases—shows on the average little difference between the zones. But during the last three years it was markedly highest in the outer districts and least in the central districts. This is probably to some extent due to the occurrence of one or two outbreaks in institutions in the outer districts (see page 28), but other influences were also operative.

(6) The proportion of secondary to primary cases has increased since 1921, the proportions rising from 5·9 to 10·4 per cent.; this probably indicates the growth of a non-immune population since the severe outbreak of 1914-1920.

(7) In the central part of the city diphtheria is acquired at an earlier average age than in the outer zone. The earlier age at infection results in a higher proportion of deaths, and so in a raised death rate in the central area. The lower proportion of cases notified in the central zone is probably dependent upon the failure to obtain medical assistance in the milder types of cases.

**Table No. 5.**  
**DEATHS FROM DIPHTHERIA.**

DISTRICTS.	QUARTERS.								YEAR 1928		
	March.		June.		Sept.		Dec.		M.	F.	Total.
	M.	F.	M.	F.	M.	F.	M.	F.			
Exchange .....	1	2	1	...	1	1	2	3	5	6	11
Abercromby .....	...	1	2	...	...	...	1	...	3	1	4
Everton .....	1	3	1	...	2	2	1	...	5	5	10
Kirkdale .....	3	...	2	...	...	...	2	...	7	...	7
Edge Hill .....	2	2	...	2	...	...	4	...	6	4	10
Toxteth .....	2	1	2	1	...	...	3	1	7	3	10
Walton .....	1	1	2	3	2	4	1	...	6	8	14
West Derby .....	1	5	2	...	4	7	5	2	12	14	26
Wavertree .....	2	...	...	1	...	...	2	2	4	3	7
Toxteth (East) .....	...	...	...	...	1	...	...	...	1	...	1
Fazakerley .....,.....	...	...	...	...	...	...	...	...	...	...	...
Woolton.....	...	...	...	...	...	...	...	...	...	...	...
City .....	13	15	12	7	10	14	21	8	56	44	100

**AGES AT DEATH.**

Under 1 year.	1 -	2—	3 —	4—	5—	10—	15—	20—	30—	40—	50 -	60—	All Ages.
10	16	11	16	12	27	6	1	1	...	...	...	...	100

**AGES OF NOTIFIED CASES.**

28	67	104	184	172	742	240	118	120	91	27	9	0	1902
68·2%						31·8%							

**PERCENTAGE FATALITY AT EACH AGE.**

35·5	23·9	10·5	8·7	7·0	3·6	2·5	0·85	0·83	...	...	...	...	5·27
------	------	------	-----	-----	-----	-----	------	------	-----	-----	-----	-----	------

N.B.—Deaths in public institutions are transferred to the districts whence the patients came.

**PREVENTIVE MEASURES.**—The most effectual method of preventing diphtheria in the past has been the removal of such cases to hospital; the great reduction in the fatality from the disease, which has fallen from 32·6 per cent. of the notified cases in 1891 to 5·3 per cent. in 1928, is due to the administration of anti-toxin promptly and in adequate amount; 93 per cent. of the notified cases were removed to hospital for treatment during 1928.

Recently, by the Schick test, it has become possible to distinguish between those who are and those who are not liable to attack; those susceptible can be immunised in a high proportion of cases by three subcutaneous injections of toxoid-antitoxin, and this has been carried out in a number of institutions during the year. In the case of children under 5 or 6 years of age the proportion of susceptibles is so high that the preliminary Schick test can be dispensed with and the three immunising injections given at once. Recently the toxoid without anti-toxin has been used.

This method of immunisation has been used by the Liverpool Public Health Department during the past four years. Up to March 31st 1929, 126 children have been inoculated without testing, and of 899 persons tested 387 (41 per cent.) have been found susceptible and immunised. A total of 1,030 persons have been tested and/or inoculated without any ill effects beyond, in a few cases mainly amongst adults, a transient soreness of the arm. In addition, a number of nurses were tested during 1928 at the City Hospitals, and those found susceptible were immunised.

From the experience in a number of institutions it can be stated with confidence that by Schick-testing and subsequent inoculation of those found susceptible an instrument is available by which an outbreak of diphtheria in an institution for children can be brought to an end; without this preventive method an outbreak of diphtheria might persist almost indefinitely in such an institution if susceptible persons are being frequently admitted. If subsequently newcomers are tested and immunised against diphtheria, an institution can be kept practically free of the disease.

A much wider field, however, is open for this method of prevention. The risk of dying from diphtheria is much greater during the first few years of life than in subsequent years. It was with this purpose and following on a report of the Medical Officer of Health that authority was given by the Health Committee in 1926 to issue supplies of diphtheria (and also scarlet fever) prophylactics for medical practitioners and to give assistance in testing older children as to susceptibility to diphtheria and scarlet fever at the request of a medical practitioner.

Zone	DIPHTHERIA.				SCARLET FEVER.				
	Central.	Middle.	Outer.	Whole City.	Central.	Middle.	Outer.	Whole City.	
Case rates— 1920-27	1.26	1.40	1.92	1.58	2.24	3.48	3.68	3.32	Case rate per 1,000 Population.
1928...	1.92	2.09	2.50	2.20	1.74	2.49	2.97	2.53	
Death rates— 1920-27	13.8	12.7	13.0	13.1	5.87	6.46	4.78	5.80	Death rate per 100,000 Population
1928...	11.8	10.9	12.5	11.5	3.14	1.71	2.57	2.19	
Fatality rates— 1920-27	9.85	8.80	6.76	8.20	2.34	1.76	1.25	1.65	Fatality rate : Deaths per 100 Cases.
1928...	4.3	5.20	5.0	5.27	1.8	0.7	0.8	0.86	
Proportion of Secondary to Primary Cases— 1920-27	5.60	6.36	9.72	8.41	12.1	12.3	13.4	14.1	Percentage Propor- tion of Secondary Cases to Primary Cases.
1928...	2.12	6.55	10.40	10.38	7.8	9.16	19.8	17.5	
Children, 0-2 years— 1920-27	13.45	8.80	4.95	8.25	8.6	5.3	3.7	5.2	Proportion of cases in Children, aged 0-2 years, to Total Cases.
1928...	6.1	5.2	4.3	5.0	5.5	4.2	3.1	3.9	
Proportion of Children, 0-5 years— 1920-27	35.4	30.0	22.7	29.0	35.4	26.9	22.5	25.0	Proportion of Cases in Children, aged 0-5 years, to Total Cases.
1928...	33.0	33.6	19.2	29.0	31.0	31.2	25.8	29.2	
Population, 1922	123,342	489,559	205,194	823,095	—	—	—	—	
Persons per acre (mean)	81.5	138.1	21.9	36.2	—	—	—	—	

### SCARLET FEVER.

Scarlet Fever has shown a steady decline in mortality during the past 50 years. Whilst the number of cases has shown a distinct reduction, the fatality (or proportion of deaths to cases) has shown a very marked reduction, being in 1928 only 0·9 per cent., as against 19·2 in the year 1889. The death rate from scarlet fever was 2·2 per 100,000 inhabitants, which is, except for 1927, the lowest ever recorded in this city. This decline in the mortality of scarlet fever is well shown in the attached diagram.

The following table shows the incidence and mortality from scarlet fever during the past 11 years.

**Table 1.**

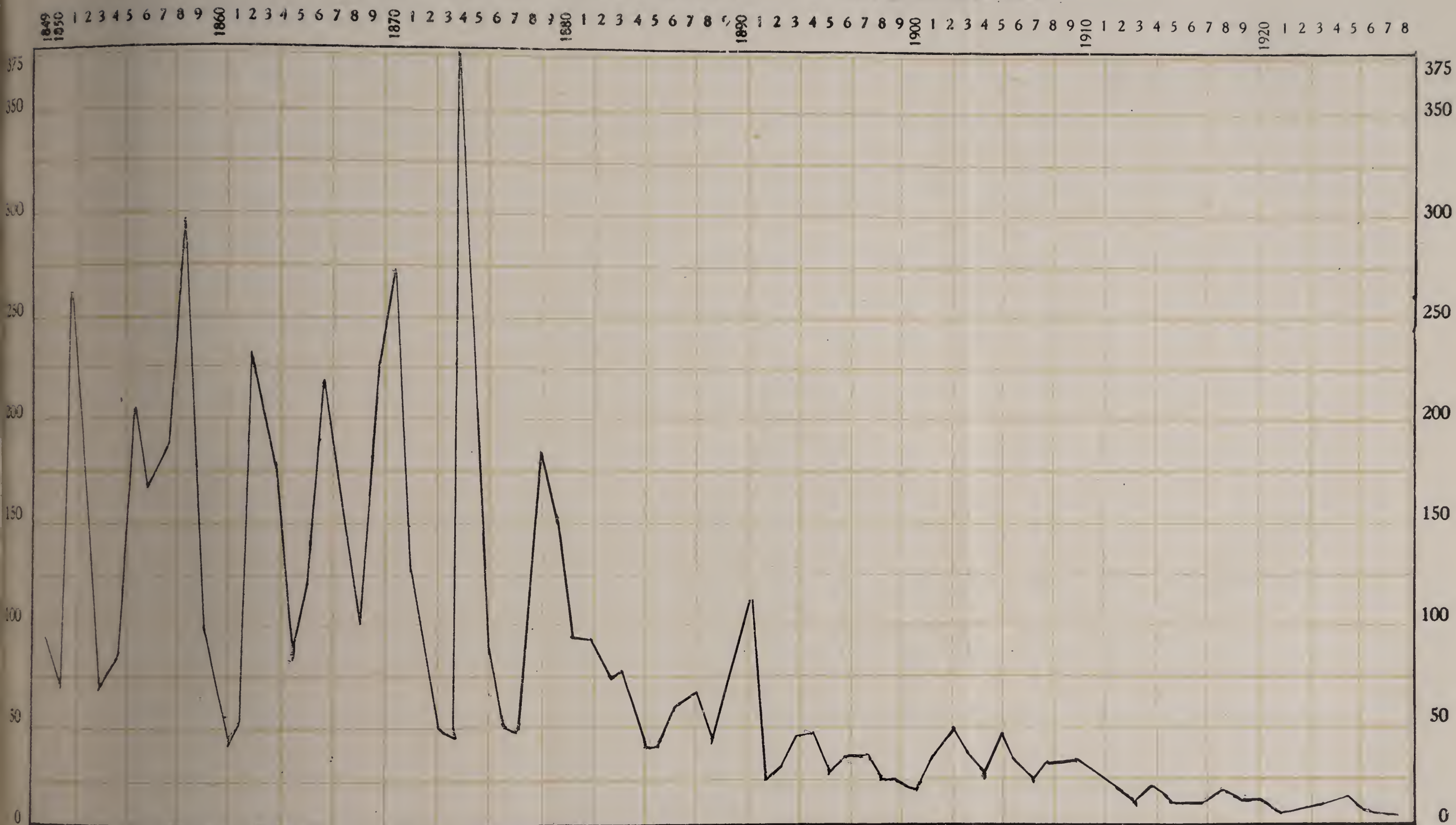
**SCARLET FEVER IN THE CITY OF LIVERPOOL, 1918-1928.**

	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Cases ... ..	3,020	2,735	3,230	3,062	2,419	2,307	3,790	3,561	2,244	1,640	2,193
Deaths ... ..	125	74	70	45	39	43	63	93	24	12	19
Case-rate per 1,000 inhabitants ...	3·8	3·1	4·1	3·7	2·9	2·8	4·5	4·2	2·6	1·9	2·5
Death-rate per 100,000 inhabitants ...	16·0	9·3	8·9	5·5	4·7	5·2	7·4	11·0	2·8	1·4	2·2
Fatality rate per 100 cases ... ..	4·1	2·6	2·2	1·5	1·6	1·8	1·7	2·5	1·1	0·7	0·9

During 1928 2,193 cases and 19 deaths were recorded, giving an attack rate of 2·5 per 1,000, and a mortality rate of 2·2 per 100,000 of the population. The low mortality is due not only to the slight prevalence of scarlet fever, but also the small proportion of deaths to notified cases (fatality rate), which was 0·87 per cent. In this reduction of fatality the more extended use of scarlatinal anti-toxic serum has played a part. The importance of scarlet fever, however, arises not only from the deaths but from the cases of heart, kidney and middle ear disease which it occasions.

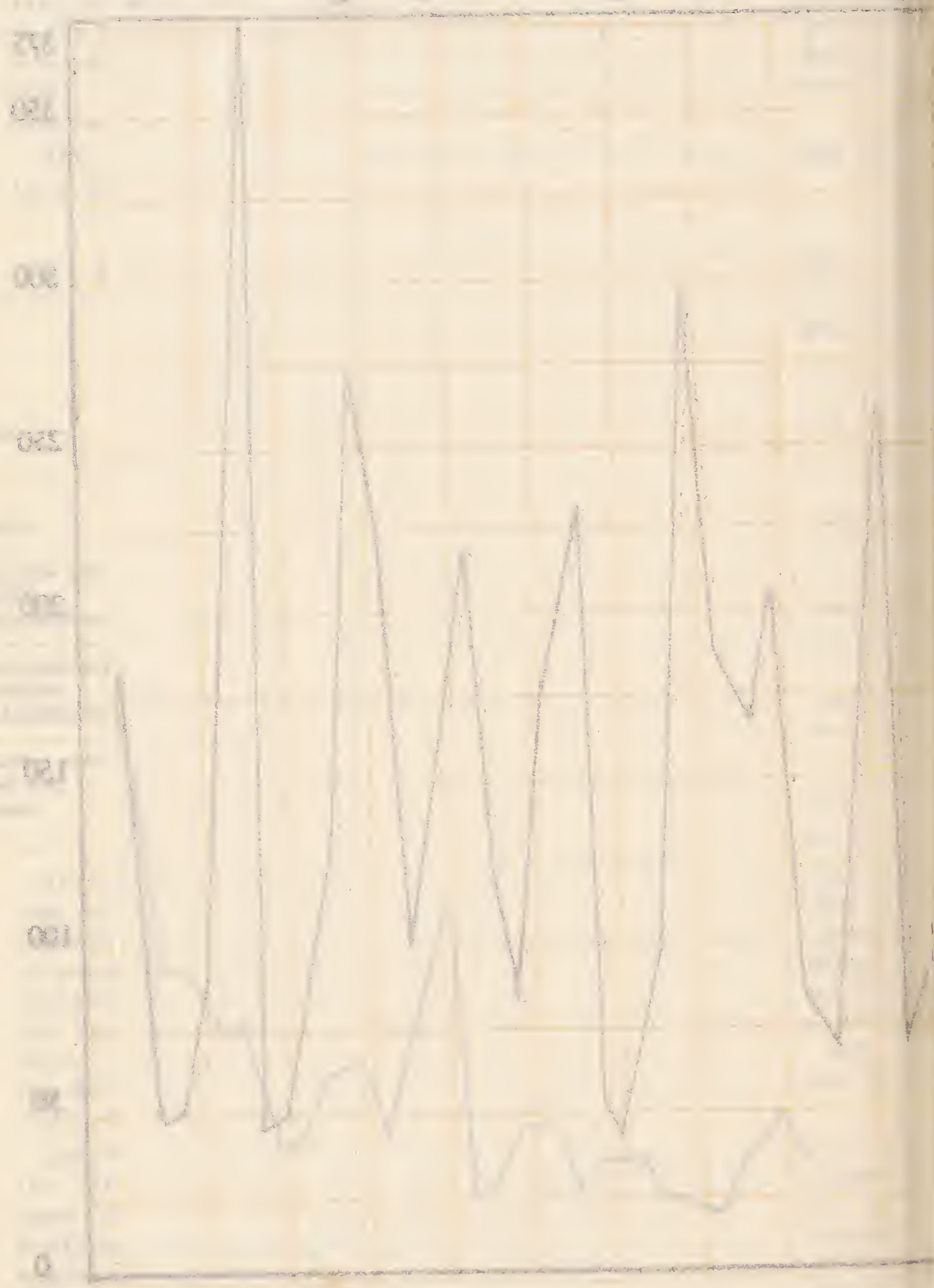
Reference to Table II, on page 31, will show that, as in previous years, the fatality, and therefore also the mortality, of scarlet fever was least in the outer districts of the city, but highest in the central portions of the city. In the middle districts, with a population aggregating 466,360 persons, among 1,162 cases of scarlet fever notified there occurred only eight deaths. This gives a fatality of only 0·7 per cent.

CITY OF LIVERPOOL. Scarlet Fever Death Rate per 100,000 1849-1928.



CITY OF LIVERPOOL

REPORT ON THE PROGRESS OF THE WORK OF THE CITY OF LIVERPOOL



## SCARLET FEVER, 1928.

31

District.	Estimated Population, 1928.	Cases.	Deaths.	Attack Rate per 1,000.	Death Rate per 100,000.	Case Fatality Rate %.	Percentage.		
							Proportion of Secondary to Primary Cases. *	Proportion of Children 0-2 years to Total Cases.	Proportion of Children 0-5 years to Total Cases.
1. Exchange .....	82,359	113	2	1.37	2.4	1.8	5.9	7.0	41.6
2. Abercromby .....	45,002	109	2	2.42	4.4	1.8	10.5	3.7	20.2
3. Everton .....	116,773	302	4	2.59	3.4	1.3	7.7	4.3	32.1
4. Kirkdale .....	64,181	152	2	2.37	3.1	1.3	7.6	3.9	25.7
5. Edge Hill .....	91,551	164	...	1.79	...	0.0	14.4	6.1	37.2
6. Toxteth .....	103,284	202	2	1.96	1.93	1.0	6.8	4.9	37.0
7. Walton.....	90,571	342	...	3.78	...	0.0	10.1	2.9	26.6
8. West Derby East .....	97,175	364	3	3.75	3.09	0.8	21.1	1.9	23.0
9. Wavertree .....	94,310	269	4	2.85	4.24	1.4	23.2	3.7	30.1
10. Toxteth E. .... (Sefton Park)	30,638	69	...	2.25	...	0.0	13.2	2.8	18.8
11. Fazakerley .....	42,850	89	...	2.08	...	0.0	14.3	6.7	31.4
12. Woolton .....	7,306	18	...	2.46	...	0.0	7.7	...	16.6
Central Districts (1 to 2) ...	127,361	222	4	1.74	3.14	1.8	7.8	5.5	31.0
Middle Districts (3 to 7).....	466,360	1,162	8	2.49	1.71	0.7	9.1	4.2	31.2
Outer Districts (8 to 12) ...	272,279	809	7	2.97	2.57	0.8	19.7	3.1	25.8
Whole City .....	866,000	2,193	19	2.53	2.19	0.86	17.5	3.9	29.2

• Cases are those with onsets in 1927

Table No. 3.  
DEATHS FROM SCARLET FEVER.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.		1928.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	T.
Exchange .....	...	1	...	...	...	...	...	1	...	2	
Abercromby .....	...	...	1	1	...	...	...	...	1	1	
Everton .....	...	...	2	...	...	1	...	1	2	2	
Kirkdale .....	...	...	1	1	...	...	...	...	1	1	
Edge Hill .....	...	...	...	...	...	...	...	...	...	...	
Toxteth .....	...	...	...	...	...	...	1	1	1	1	
Walton .....	...	...	...	...	...	...	...	...	...	...	
West Derby .....	1	1	1	...	...	...	...	...	2	1	
Wavertree .....	...	...	1	2	1	...	...	...	2	2	
Toxteth East .....	...	...	...	...	...	...	...	...	...	...	
Fazakerley .....	...	...	...	...	...	...	...	...	...	...	
Woolton .....	...	...	...	...	...	...	...	...	...	...	
City .....	1	2	6	4	1	1	1	3	9	10	

## AGES AT DEATH.

Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	60 and up- wards.	Age
...	4	2	4	1	3	2	2	1	...	...	...	...	

## AGES OF NOTIFIED CASES.

31	55	113	211	231	930	375	131	82	19	13	2	..	
29.3%					42.4%	17.1%	11.2%						

## PERCENTAGE FATALITY AT EACH AGE.

...	7.2	1.8	1.9	0.4	0.33	0.53	1.5	1.2	...	...	...	...	
-----	-----	-----	-----	-----	------	------	-----	-----	-----	-----	-----	-----	--

N.B.—Deaths in public institutions are transferred to the district  
whence the patients came.

RETURN CASES.—Cases occurring within the outside margin of one month of the discharge of a case from hospital to the same house were regarded as “return cases.” Of the 1,742 cases discharged from hospital after suffering from scarlet fever, 39, or 2·2 per cent., were associated with recurrent infection in this way. In only three houses did more than one “return case” arise, namely, 2 cases in each instance. The proportion of “return cases” to cases discharged from hospital was 1·8 in 1920, 2·7 in 1921, 3·3 in 1922, 2·6 in 1923, 3·4 in 1924, 3·3 in 1925, 2·9 in 1926, and 1·8 in 1927.

Table 4.

## SCARLET FEVER, RETURN CASES.

	1928.		Average of past 9 years.	
	No. of cases associated with return cases.	Expressed as a percentage of cases discharged from hospital.	No. of cases associated with return cases.	Expressed as a percentage of cases discharged from hospital.
January ... ..	2	1·3	6·6	2·3
February ... ..	2	1·8	6·1	2·8
March ... ..	9	6·1	6·1	3·1
April ... ..	2	2·0	4·9	2·7
May ... ..	1	0·6	6·3	3·3
June ... ..	3	1·9	4·0	2·2
July ... ..	4	2·5	5·7	2·8
August ... ..	5	3·0	3·7	2·1
September ... ..	0	0·0	2·4	1·2
October ... ..	3	2·7	3·7	2·2
November ... ..	0	0·0	4·6	1·8
December ... ..	8	4·5	8·2	2·7
WHOLE YEAR ...	39	2·2	62·2	2·5

## DICK TESTING AND IMMUNISATION AGAINST SCARLET FEVER.

The principles of this method of preventing scarlet fever are identical with those described as available against diphtheria (see p. 28), except that no anti-toxin is given with the toxin, which is used unmodified. The nursing and/or other staffs of the City Hospital, Fazakerley, City Hospital North and City Hospital South have been tested and/or immunised against scarlet fever with satisfactory results.

In addition to the above up till 1929 there have been tested for susceptibility to scarlet fever 646 children, of whom 104 were found susceptible. A total of 301 children have been immunised. At a school containing about 250 children immunisation was carried out in three batches in December, 1928, and February and May, 1929. No cases occurred in children who had been immunised, although cases continued to occur in the other groups since the completion of inoculation no further cases have occurred.

### MEASLES.

The number of deaths from measles has shown a tendency to decline of recent years. During 1928 there were 177 deaths, as against 287·2 the average of the past ten years. The mortality rate was 20·4 per 100,000 of the population.

Measles became a notifiable disease in 1915 by order of the Local Government Board (now the Ministry of Health); the disease is no longer generally notifiable, but in Liverpool is notifiable on a **voluntary basis**. During the year 6,025 cases came under the notice of the Medical Officer of Health, the sources of information being as follows:—

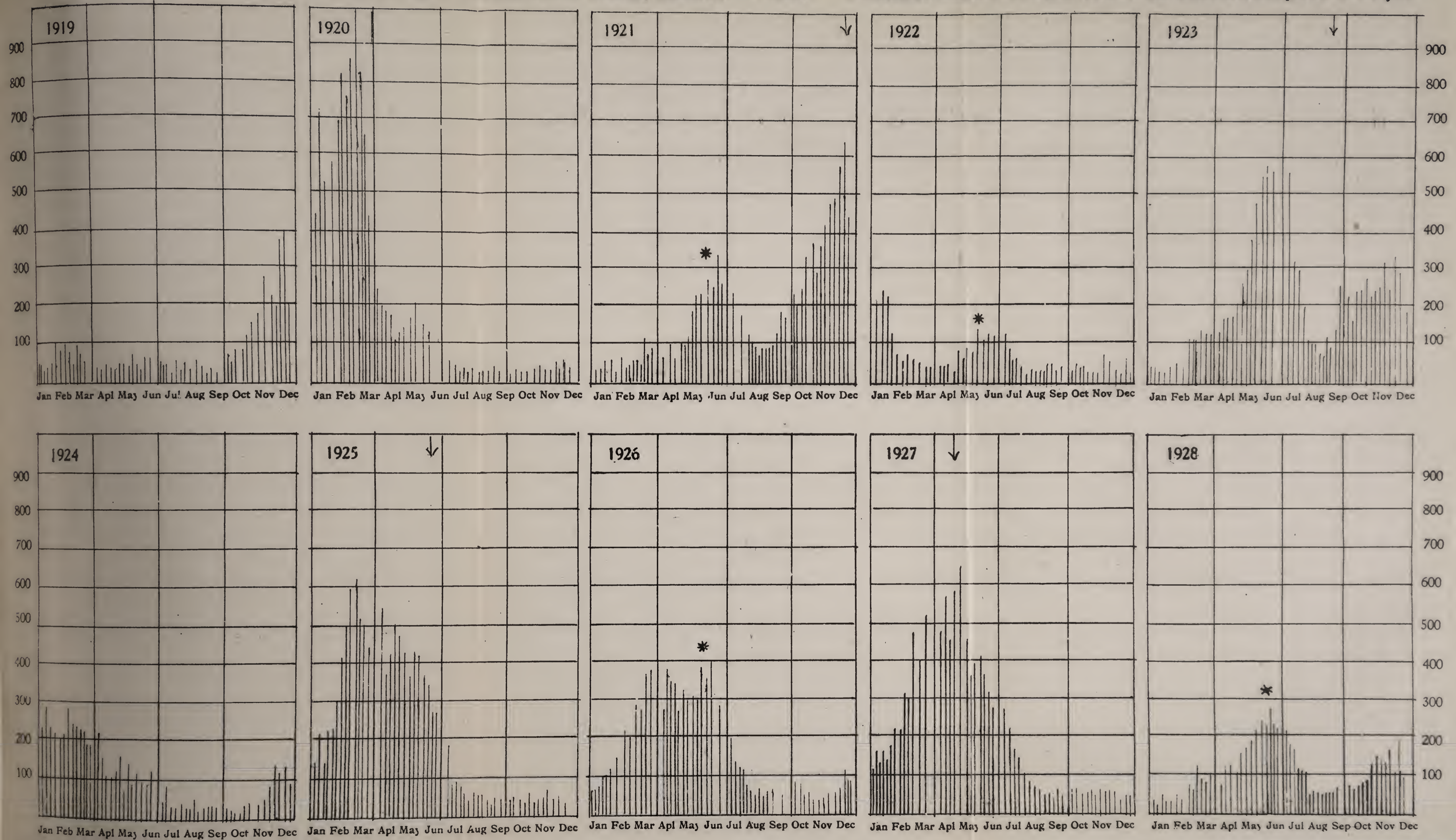
Notified by medical practitioners, 4,812.

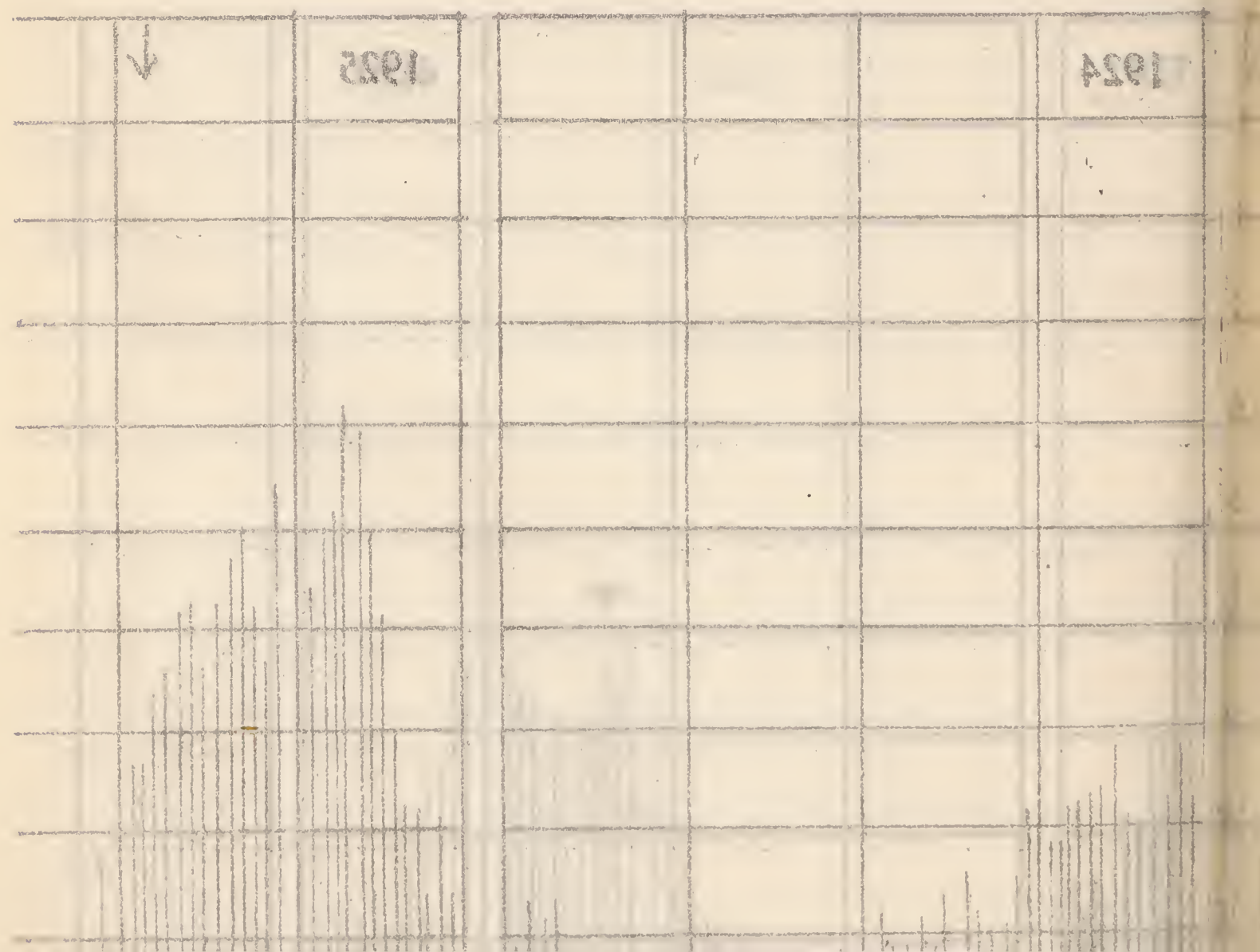
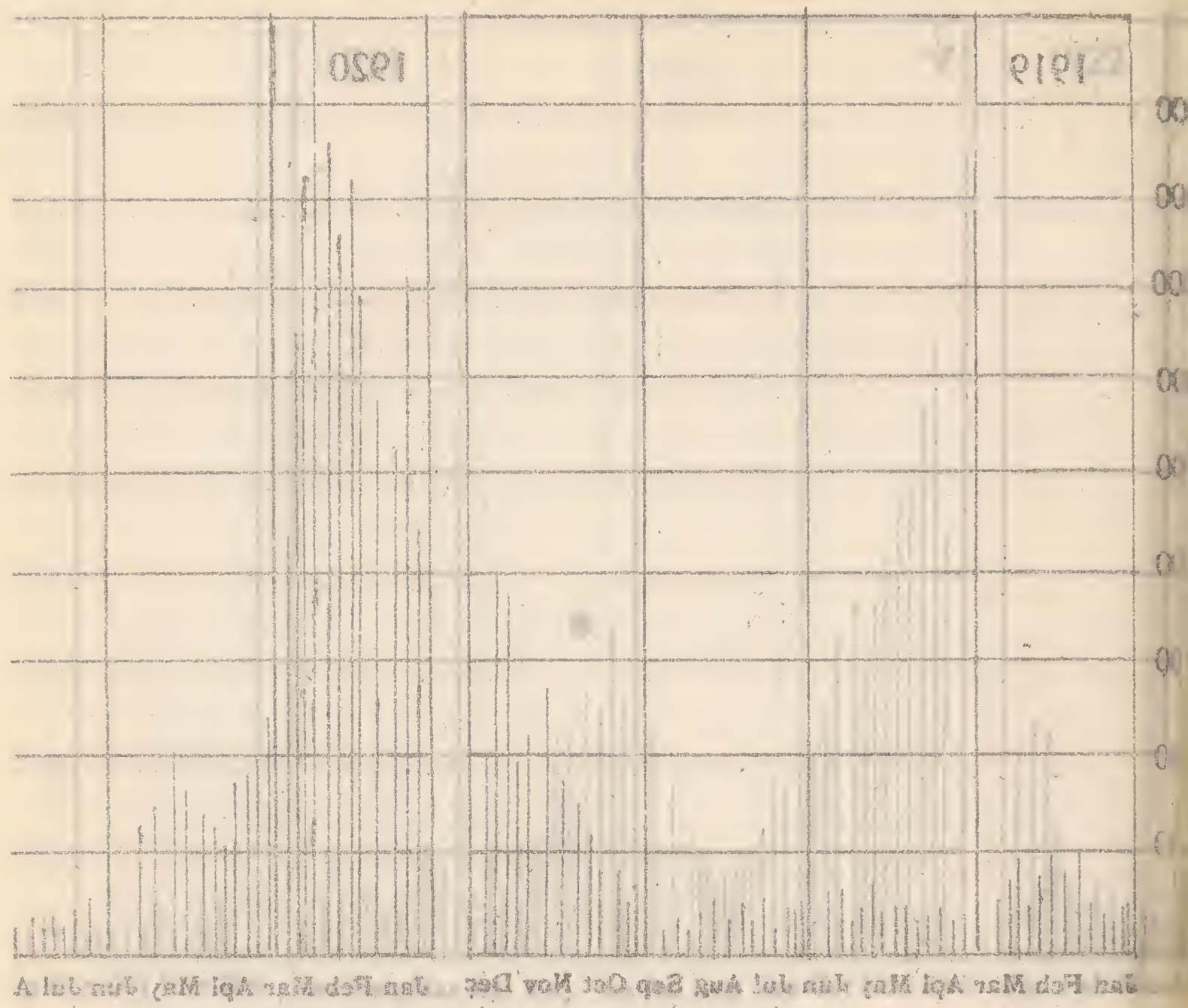
Information from schools, etc., 1,213.

Of these cases 828 were removed to hospital. The proportion of deaths to cases, or fatality rate, was 2·9 per cent., a figure slightly below the average of the past ten years, namely, 3·3 per cent. The mortality in measles depends mainly upon the age at which infection occurs; as shewn in Table 4, the great majority of the deaths occur in children under four years of age. Any increase in the proportion of cases among children under this age will be attended by a corresponding rise in fatality.

# CITY OF LIVERPOOL.

Cases of Measles during the years 1919 to 1928. The arrows show recurring intervals of 92 weeks. The asterisks indicate the normal seasonal rise in the second quarter of the year





The experience of the past eleven years is shown in the following table :

Table 1.

	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
s .....	9,288	3,983	11,448	9,143	3,570	11,089	5,709	11,202	8,694	10,606	6,025
ths .....	407	103	387	328	171	356	148	406	221	345	177
rate per 1,000 abitants .....	11.8	5.1	14.6	11.2	4.3	13.4	6.9	13.3	10.3	12.4	6.96
th rate per ,000 abitants .....	52	13	49	40	21	43	17.7	48.3	26.0	40.3	20.4
ality rate (per- tage of deaths 100 cases) ...	4.3	2.6	3.4	3.6	4.8	3.2	2.6	3.6	2.5	3.2	2.9

The experience of many years has shown that measles tends to recur in waves which follow each other at intervals of about 92 weeks, as is shown on the accompanying diagram. The periodic recurrences are very regular over considerable periods, but when the epidemic is due to reach its height in one of the three autumn months, August, September or October, it fails to do so, two maxima occurring instead, one before and the other after the expected date.

The second table shows the deaths from measles in the several districts of the city during the past six years. Exchange and Everton and Toxteth—the more central districts of the city—were principally affected, 100 out of the total of 177 deaths occurring in those districts. These districts also have a higher birth rate than the rest of the city, and it is probable that their greater mortality from measles is dependent upon the earlier age at which the children living in these districts are attacked by measles, as well as their greater density of population.

The third table gives the ages of attack and the ages at death of the 4,812 cases notified by doctors, and from these figures the corresponding fatality rates per 100 cases at each age have been obtained. It will be seen that the fatality rates in the first three years of life are considerably higher than at any subsequent period.

The following table gives the notified cases and deaths at each age for the whole period 1921-28 :—

Ages.	0	1	2	3	4	5	6	7	8	9	10-
Cases ...	3616	6766	6038	5965	5630	8837	6772	2242	1020	558	12
								20,529			
Deaths ...	549	1037	328	128	41			70			
Fatality Rate (percentage of deaths to cases).	15.2	15.3	5.4	2.1	0.7			0.3			0.0

Thus in a total of 52,267 notified cases there occurred 2,158 deaths, or 4.12 per cent.

Apart from the school closure, referred to elsewhere, other measures to limit the ravages of the disease include efforts to secure the isolation of the patients; in view of the heavy mortality among children under three years of age (see Table 3), parents are strongly urged to keep those of tender age apart from those already affected. Children coming from a house in which a case of measles has occurred are excluded from school for 16 days; children over 7 years of age who have already had measles are exempted.

The Order of the Ministry of Health authorises local authorities to provide medical assistance including nursing for the poorer inhabitants of their district, and the Health Committee appointed four permanent nurses in 1916 to deal with such cases as were contemplated by the order. This number has been increased during periods of outbreak. In consequence of the visits of these nurses, many children have benefited from the assistance and advice given, and in some instances children have been removed for hospital treatment who would otherwise have

been left at home without adequate care and attention. The visits, etc., made by these nurses in the course of 1928 were as follows:—

New cases visited during year 1928 ... ..	4,567
Cases nursed                    "           "   ... ..	467
Re-visits to cases           "           "   ... ..	4,006

As 98 per cent. of deaths from measles are due to complications, mainly pneumonia, there can be little doubt that the work of these nurses has resulted in much saving of life.

**Table 2.**

Deaths from measles for the years 1923 to 1928, after distribution of the institutional deaths according to the place of residence:—

District.	1923.	1924.	1925.	1926.	1927.	1928.
Exchange ...	76	20	112	51	83	40
Abercromby ...	35	8	33	15	31	13
Everton ...	63	30	81	44	88	34
Kirkdale...	26	13	36	16	13	9
Edge Hill ...	29	12	28	29	30	8
Toxteth ...	60	32	54	29	44	26
Walton ...	19	10	17	13	14	13
West Derby ...	13	10	14	8	11	16
Wavertree ...	30	7	29	9	27	11
Sefton Park ...	...	3	1	6	4	1
Fazakerley ...	...	3	...	...	...	6
Woolton ...	...	...	1	1	...	...
Total ...	356	148	406	221	345	177

**Table 3.**  
**DEATHS FROM MEASLES.**

DISTRICTS	QUARTERS.								YEAR 1928.		
	March		June.		Sept.		Dec.		M.	F.	Total.
	M.	F.	M.	F.	M.	F.	M.	F.			
Exchange .....	1	1	6	5	9	9	4	5	20	20	40
Abercromby .....	...	...	1	4	1	3	3	1	5	8	13
Everton .....	1	...	5	5	4	5	6	8	16	18	34
Kirkdale .....	...	...	3	1	2	2	...	1	5	4	9
Edge Hill .....	1	...	2	2	...	1	2	...	5	3	8
Toxteth .....	1	2	4	5	4	7	1	2	10	16	26
Walton .....	1	1	2	3	...	...	4	2	7	6	13
West Derby .....	2	1	5	1	1	3	...	3	8	8	16
Wavertree .....	...	2	2	2	4	1	...	...	6	5	11
Toxteth East .....	...	...	...	1	...	...	...	...	...	1	1
Fazakerley .....	...	3	2	1	...	...	...	...	2	4	6
Woolton .....	...	...	...	...	...	...	...	...	...	...	...
City .....	7	10	32	30	25	31	20	22	84	93	177

AGES AT DEATH.

Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	60—	All Ages.
40	95	26	9	1	6	...	...	...	...	...	...	...	177

AGES OF NOTIFIED CASES.

348	622	558	520	541	1941	164	118					4812
-----	-----	-----	-----	-----	------	-----	-----	--	--	--	--	------

PERCENTAGE FATALITY AT EACH AGE.

4·5	14·9	4·6	1·7	0·6	0·3	0·0	...					4·2
-----	------	-----	-----	-----	-----	-----	-----	--	--	--	--	-----

N.B.—Deaths in public institutions are transferred to the district whence the patients came.

Table 4.

## MEASLES DURING THE YEAR 1928.

Statement showing the total numbers of cases brought under the notice of the medical officer, from schools, and by notifications from medical practitioners :—

Age.	Cases occurring in children of school age from both sources	Cases notified by medical practitioners.	Number of deaths.	Fatality rate per 1,000 cases.
0—1	...	348	40	114·9
1—2	...	622	95	152·7
2—3	...	558	26	46·6
3—4	...	520	9	17·3
4—5	121	541	1	1·8
5—6	1075	853	6	3·1
6—7	808	652		
7—8	337	251		
8—9	179	130		
9—10	78	55	0	0·0
10—11	50	48		
11—12	54	37		
12—13	43	32		
13—14	43	27	...	...
14—15	139	20		
15 upwards	...	118	...	...
	2,927	4,812	177	36·7

### WHOOPING COUGH.

The number of cases coming to the notice of the medical officer during 1928 was 2,313, and the number of deaths 269, corresponding to a death rate of 31·1 per 100,000 inhabitants. The average death rates from whooping cough during the past 79 years is as follows :—

1850-59	...	...	...	...	...	...	103·6
1860-69	...	...	...	...	...	...	107·3
1870-79	...	...	...	...	...	...	86·8
1880-89	...	...	...	...	...	...	72·9
1890-99	...	...	...	...	...	...	56·3
1900-09	...	...	...	...	...	...	45·0
1910-19	...	...	...	...	...	...	32·6
1920-25	...	...	...	...	...	...	23·8
1926	...	...	...	...	...	...	22·1
1927	...	...	...	...	...	...	14·6
1928	...	...	...	...	...	...	31·1

This shows a very considerable decline in mortality during this period. Whether the decline is due to lessened prevalence, to alterations in the age-incidence, or to lowered virulence cannot be ascertained from the figures. The following table shows for the past ten years the numbers of cases coming to the notice of the medical officer, the numbers of deaths, the death rate per 100,000 inhabitants, and the fatality per 100 cases :—

Years.	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Cases ... ..	788	2804	3019	2025	2261	2321	2274	1971	1988	2313
Deaths ... ..	53	228	210	182	156	169	227	188	125	269
Death rate per 100,000 of the population ...	7	29	26	22	19	20	27	22	15	31
Fatality rate (Percentage of deathstocases)	6·7	8·1	8·1	9·0	7·9	7·3	9·9	9·5	6·3	11·6

Unfortunately the figures for 1928 are not so satisfactory, the number of deaths recorded was 269, the highest number registered since 1918, when 364 deaths occurred. The ages at death were :—Under 1 year 108, 1-2 years 105, 2-3 years 37, 3-5 years 19. All the deaths were those of children under 5 years, and 213 were those of children under 2 years of age. Nor must this total be regarded as the complete toll; whooping cough was especially prevalent in January and February and, as reference to the diagram facing page 46 will show, there was a considerable rise in the deaths from respiratory disease of children under 5 years of age during those months. Many of the deaths were doubtless due to pneumonia or bronchitis supervening upon whooping cough.

As the disease is not compulsorily notifiable, caution is necessary in drawing conclusions from the figures relating to cases and fatality rates. Whooping cough is extremely fatal in the first two or three years of life, and it is of the utmost importance that children of tender years should be protected from possible sources of infection. More than half the deaths recorded on page 15 as occurring from the various infectious diseases during 1928 were caused by whooping cough.

### CEREBRO-SPINAL FEVER.

Twenty-one cases of cerebro-spinal fever occurred during 1928, of which 16 (or 86 per cent.) proved fatal, making a death rate of 1·8 per 100,000 of the population. The cases during the years 1916 to 1928 were 37, 34, 17, 26, 27, 26, 18, 8, 13, 15, 16 and 25, respectively.

Diagnosis was confirmed by the finding of the causal organism (the meningococcus) in the cerebro-spinal fluid after lumbar puncture in fourteen cases. In two other cases the result of examination of the cerebro-spinal fluid pointed to a meningococcal infection, although the organism was not found.

In two cases admitted as cerebro-spinal meningitis the organisms found were not those of cerebro-spinal fever, but of tuberculous meningitis, and in one pneumococcal; in four other cases the disease was found to be encephalitis lethargica; in a further two cases rickets and dementia præcox, respectively.

ENCEPHALITIS LETHARGICA.

This disease was made notifiable in 1919; one death from this cause was reported in 1918. During 1924 189 cases were reported in the city. During 1928 encephalitis lethargica was still prevalent in Liverpool. After excluding the duplicate notifications, 66 notifications of cases of encephalitis lethargica were received; 12 of these were found, mostly after admission to hospital, to be suffering from other diseases namely:—

Pneumonia	...	...	...	...	...	...	5 cases.
Tuberculous meningitis	...	...	...	...	...	...	2 „
Other diseases, namely, meningeal hæmorrhage 1, cerebral tumour 1, measles 1, others 2	...	...	...	...	...	...	5 „

There are left, therefore, 54 cases which remained in the records as cases of encephalitis lethargica. There were 24 deaths certified as from encephalitis lethargica; of these 13 were deaths of persons either notified in earlier years and whose malady had become chronic, or were transferred deaths from outside areas; the net total of deaths attributable to encephalitis lethargica contracted in 1928 was therefore 11. The fatality rate per 100 cases is 24 for 1928. During the period 1918-1928 there have been notified 626 cases, of which 192, or 30·7 per cent., have sooner or later proved fatal. The incidence and mortality during this period are shown in the following table:—

Table 1.  
CITY OF LIVERPOOL.  
ENCEPHALITIS LETHARGICA (1918-1928).

	1918-19	1920	1921	1922	1923	1924	1925	1926	1927	1928
Cases ... ..	3	17	27	5	111	189	108	114	69	192
Rate per 1,000 population	...	0·02	0·03	0·01	0·13	0·22	0·13	0·13	0·08	0·24
Deaths... ..	1	2	6	3	36	22	44	29*	25†	11
Rate per 100,000 population	...	0·20	0·73	0·36	4·30	2·40	5·22	3·4	2·92	2·2
Fatality per 100 cases	...	12	22·2	40	32·4	10·6	40·5	25·5*	36·2†	44

\* This number and rate includes the deaths of 4 persons who were either notified in earlier years or were transferred from outside districts. If these deaths are excluded the fatality rate becomes 21·9 per cent.

† This number and rate includes the deaths of 9 persons who were either notified in earlier years or were transferred from outside districts. If these deaths are excluded the fatality rate becomes 23 per cent.

\*\* This number and rate includes the deaths of 13 persons who were either notified in earlier years or were transferred from outside districts. If these deaths are excluded the fatality rate becomes 20·4 per cent.

The old standing cases which died in 1928 were notified as follows:—1920 one, 1921 one, 1922 one, 1924 two, 1925 one, 1926 one, 1927 two, not notified before, four.

Table 2.  
CITY OF LIVERPOOL.

CASES BY MONTH AND YEAR OF ONSET AND YEAR OF REPORT.

		Total 1922	Total 1923	Total 1924	1925 Reported in				Total	1926 Reported in			Total	1927 Reported in		Total	1928	GRAND TOTAL
					1925	1926	1927	1928		1926	1927	1928		1927	1928			
ry ...	...	—	48	5	12	2	—	1	15	8	—	—	8	4	—	4	5	85
ary	...	1	25	8	8	—	—	—	8	5	1	—	6	4	—	4	2	54
	...	1	8	29	10	3	—	—	13	8	2	—	10	2	—	2	5	68
	...	—	5	39	7	—	—	—	7	8	—	—	8	2	—	2	2	63
	...	—	5	31	8	—	—	—	8	4	—	—	4	5	—	5	—	53
	...	—	5	19	4	—	1	—	5	5	1	—	6	4	—	4	3	42
	...	2	—	9	4	2	—	—	6	3	—	—	3	—	—	—	2	22
t ...	...	1	1	12	4	—	—	—	4	1	—	1	2	1	—	1	2	23
nber	...	—	—	11	—	1	—	—	1	5	—	—	5	1	—	1	4	22
er ...	...	1	4	12	4	2	—	—	6	4	—	—	4	5	1	6	3	36
nber	...	1	7	9	—	3	—	—	3	2	1	—	3	3	1	4	—	27
nber	...	7	10	15	1	3	1	—	5	4	3	1	8	4	2	6	1	52
TOTAL ...		14	118	199	62	16	2	1	81	57	8	2	67	35	4	39	29	547
reported in 1925		2	3	3					1				—			—		9
tto 1926		1	3	7					2				4			—		17
tto 1927		4	1	3					1				2			3		14
tto 1928		—	—	4					4				2			5		15
TOTAL ...		21	125	216					89				75			47	29	602

Table 3.  
AGES OF CASES AND DEATHS, 1928.

Age.	0-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Total
ute Cases ...	2	5	3	3	4	6	2	3	1	1	—	30
ronic Cases...	—	—	3	3	5	5	4	3	1	—	—	24
TOTAL ...	2	5	6	6	9	11	6	6	2	1	—	54
aths*	—	—	2	1	1	1	3	2	—	1	—	11*
ality cent. }	—	—	33	16	11	9	50	33	—	100	—	20·4

Thirteen deaths occurring in 1928 among persons notified in 1920 to 1927 have been excluded from this table. See footnote to table 1.

It is clear from the above table that about half the cases occurred under 30 years of age, and that over 60 years of age the liability to contract the disease is small. On the other hand the fatality increases rapidly with advancing age. The smaller fatality in childhood and adolescence is unfortunately offset by the liability to develop sequelae under 30 years of age.

Twenty-four of the cases were males and thirty were females.

### METHOD OF SPREAD.

Doubt has been expressed in some quarters as to the infectious character of the disease. Enquiry points clearly to the disease being communicable.

Of the 54 cases reported in 1928, 25 were chronic cases, whose illness was contracted in earlier years. Association with preceding cases was traced in two instances.

#### I.—ASSOCIATION WITH AN ACUTE CASE.

M.R., 8 years, living at 30, O—— Street, was taken ill on February 13th. Her brother had been taken ill on November 15th, 1927.

#### II.—ASSOCIATION WITH A CHRONIC CASE.

J.W., Senr., 45 years, living at 37, M—— Street, was taken ill early in 1928. His son, J.W., Junr., was seen early in 1923, and has since become a chronic case, being now in an asylum. The case of the father proved fatal.

Thus in two instances, of the 30 acute cases, or about six per cent. of the total, it was possible to trace association with a preceding case. From enquiries made in the past five years such an association was found in 70 out of 602 cases, or 11 per cent. of the whole. The infectivity of the disease is therefore highly probable.

### ACUTE ANTERIOR POLIOMYELITIS (INFANTILE PARALYSIS).

During 1928 six cases of poliomyelitis were notified, five of which, or 83 per cent., proved fatal. In 1926 19 cases were reported, whilst 37, 5, 9, 4, 6, 2, 6, 6, 11, 39, 14, 4, 19 and 15 cases were reported in the years 1914 to 1927. The cases during 1928 were reported as follows:—January, 1 case; February, 1 case; March, 1 case; May, 1 case; August, 1 case; November, 1 case. The notification of cases of poliomyelitis is probably very incomplete.

## INFLUENZA AND OTHER RESPIRATORY DISEASES.

Respiratory diseases cause an increasing proportion of the total deaths from all causes. In the decennial period 1871-80 the proportion of deaths certified as due to respiratory diseases was 20·2 per cent. of all deaths; in 1928, 22·6 per cent. of all deaths were respiratory; the variations correspond to the prevalence of influenza. The table below shows for deaths due to respiratory diseases the actual numbers, the percentage proportion to all deaths, the death rates per 1,000 population, and the death rates expressed as a percentage proportion of the rates experienced in 1871-80 (index figures) :—

### DEATHS FROM RESPIRATORY DISEASES. (Including Influenza).

	Actual numbers of deaths.	Percentage proportion to all deaths.	Death-rate per 1,000 population.	Death-rates as a percentage proportion of rate experienced in 1871-80.
1871-80 ...	29,763	20·2	5·7	100
1881-90 ...	32,507	23·2	5·9	104
1891-1900	35,819	24·6	5·9	104
1901-10 ...	32,995	21·8	4·5	79
1911-20 ...	36,480	27·3	4·73	83
1921-25 ...	15,075	25·8	3·64	63·8
1926 ...	2,809	24·1	3·30	57·7
1927 ...	3,083	26·0	3·60	63·1
1928 ...	2,587	22·6	3·0	52·6

The rate per 1,000 population had therefore declined in 1927 to 52·6 per cent. of the 1871-80 rate. The decline, however, has not been steady; a rise occurred in 1881-90, and continued into the following decennium. A later rise occurred in 1911-20 owing to the virulent influenza pandemic of 1918-19.

The experience of earlier years has shown that epidemics of influenza recur at intervals of 33 weeks, or multiples of this period; the most severe outbreaks are those which occur in the winter months, namely,

from January to March. Reference to the attached graph will show that one was anticipated about the second week in May. This being so late in the season no considerable outbreak occurred in 1928. The evidence, however, pointed to a considerable outbreak occurring about the last week of the year.

The mortality from respiratory diseases rose steadily during the second and third weeks of December and during the first two months of 1929 the city experienced the most severe outbreak of influenza that has occurred since the world-wide pandemic of 1918/19.

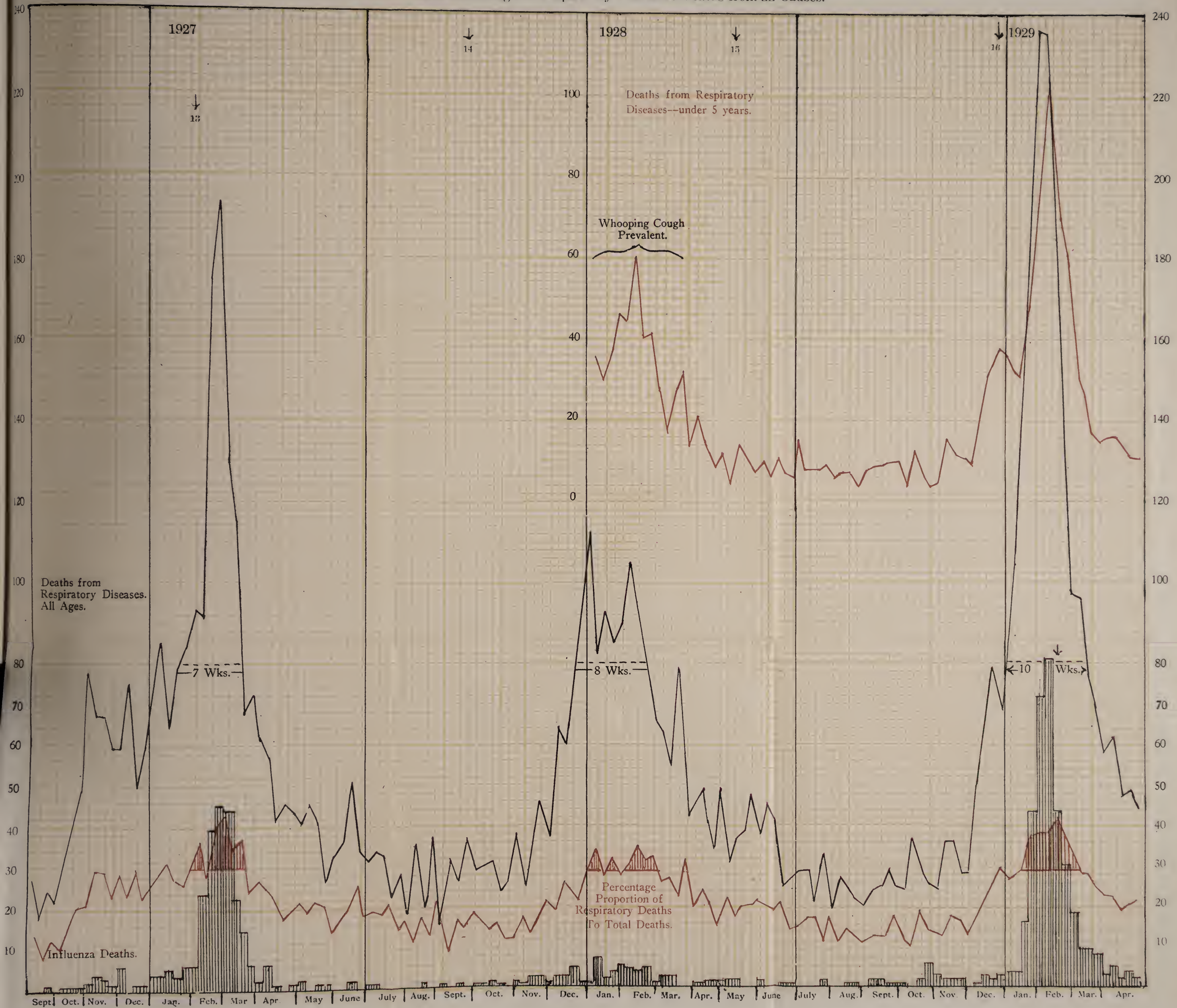
During 1922 and 1927 considerable epidemics of influenza occurred, the number of deaths actually ascribed to this cause in those years being 243 and 268 respectively. Were this the full toll of the disease, these figures would deserve attention, but there is every reason to believe that the number of deaths attributable directly or indirectly to this cause considerably exceeds those actually recorded.

The 1928/9 epidemic appeared to begin on the western seaboard of the United States in October; by December 8th the epidemic had reached its height on the Pacific coast, but it did not reach the Eastern seaboard until a fortnight later, and reached its apex during the week ended January 26th. By this time it had crossed the Atlantic, and had made its appearance in Scotland, where the first indication of any marked rise in the number of deaths was in Glasgow during the week ended January 12th. Shortly afterwards there was evidence of its appearance in Belfast and Northern Ireland. Influenza also appeared in epidemic form on the Continent; Breslau was affected in the middle of December with a maximum on January 5th, and influenza gradually spread to other parts of Europe, moving mainly from East to West and South. The epidemic was most severe in industrial areas, but the mortality affected persons over 60 years of age.

In Liverpool, the first definite appearance of influenza in epidemic form was in the third week of January, when 16 deaths were so ascribed.

# CITY OF LIVERPOOL

Weekly Deaths from Influenza, from All Respiratory Diseases—Both at All Ages and at Ages under 5 years.  
and Percentage of Respiratory Deaths to Deaths from all Causes.





The number of deaths from all forms of respiratory disease showed evidence of a rise during the first week in January, when 87 deaths were registered. The disease continued in epidemic form for nine weeks, during which period 311 deaths were certified as being due to influenza. Comparing the first nine weeks of 1929 with the corresponding period of 1928, a year largely free from influenza, there occurred 3,720 deaths in 1929 and 2,559 deaths in 1928, or an excess of 1,061 in 1929. It is true that the weather was notably severe for a large part of the time, but the greater part of this excess may reasonably be attributed to influenza. It should be noted that the severe frost occurred during the period February 10th to March 2nd, when the epidemic and the general mortality were both rapidly declining.

An examination of the deaths at several ages from a number of causes shows that the greatest part of this excess of mortality during 1929 over 1928 occurred at ages 65 and upwards; further, the greater part of this excess, 774 deaths in all, was to be accounted for by diseases of the respiratory system, and 224 deaths to diseases of the heart and blood vessels. This latter group probably owes its increase as much to the severity of the weather as to the effects of influenza:—

**City of Liverpool—January 1st to March 2nd.**

**Excess of mortality of 1929 over 1928 from certain causes.**

	0-1	1-5	5-15	15-65	Over 65	TOTAL.
Influenza ... ..	11	13	6	9	147	273
Other Respiratory Diseases ... ..	11	36	6	125	289	467
Pulmonary Tuberculosis ... ..	(—1)	3	—	25	7	34
Organic Disease of the Heart ... ..	—	—	3	89	89	181
Diseases of Blood Vessels ... ..	—	—	—	3	40	43
	21	52	15	338	572	998

The height of the epidemic in this city was reached in the week ended February 2nd, when 606 deaths were registered. Comparison with the outbreaks of 1918 and 1919, when 626 and 638 deaths were recorded in the peak weeks, shows that this outbreak was of similar severity :—

City of Liverpool.

Week ended.	Total Deaths All causes.	Weekly Death Rate per 1,000 of estimated population.	No. of Deaths from		Proportion of respiratory deaths to total deaths.
			Influenza.	Other Respiratory Diseases.	
Oct. 19th, 1918...	626	41·6	198	182	60·7
Feb. 22nd, 1919...	638	42·5	169	232	62·7
Feb. 18th, 1922...	520	33·6	51	215	51·1
Feb. 26th, 1927...	443	27·0	45	193	53·5
Feb. 2nd, 1929...	606	37·8	72	237	50·1

The Medical Officer is indebted to the Registrar of the University for the following figures relating to the attendance of students in three weeks during the progress of the epidemic, and also during the first week of November, which forms a normal for comparison :—

Return of percentages of attendances made by University Students.

	WEEK ENDING			
	Nov. 7th.	Jan. 18th.	Feb. 1st.	Feb. 8th.
Men ... ..	90%	91%	87%	91%
Women ... ..	91%	87%	81%	82%

It is apparent that the effect upon the population of University age was relatively slight, that the men were less affected than the women, and that the height of the epidemic was reached by February 1st. This population may be regarded as representative of the city as a whole, as regards the incidence of infection among young adults.

Liverpool was perhaps fortunate in experiencing the worst of the epidemic before the onset of really severe weather. The greatest number of deaths ascribed to influenza in one week were in Liverpool, 81; London, 473; Birmingham, 229; Glasgow, 236; Leeds, 136; Manchester, 119; whilst the figures are only an imperfect gauge of the loss of life experienced in these cities, they may serve as indications.

At an early stage in the epidemic, it became apparent that certain schools were acting as foci of infection. At first it was mainly schools in the centre of the town that were affected, but at a later date outbreaks occurred in schools in all parts of the city, but schools in the new housing areas escaped relatively lightly in comparison with other parts of the town. A large number of schools (109) were closed partially or completely for periods of one or two weeks on the recommendation of the Medical Officer.

A very large number of leaflets giving information on the prevention of influenza were printed and distributed by the Health Department, Elementary Schools and Public Libraries and other agencies.

Owing to the numerous cases of pneumonia receiving treatment in the Poor Law Hospitals, the pressure upon these institutions during the height of the epidemic became severe; arrangements were accordingly made to receive certain minor types of infectious disease ordinarily treated in those institutions into the City Infectious Hospitals during the prevalence of influenza.

The following table shows week by week the total number of deaths from all causes, the general death-rate, and the number of deaths from influenza, pneumonia, bronchitis, and the total respiratory deaths.

These figures do not include the deaths of Liverpool residents which occurred outside the City.

1928. Week ending.	Total Deaths.	Weekly Death Rate per 1,000 of Estimated Population	NUMBER OF DEATHS FROM			Total Respira- tory Deaths.	Percent Proport of Respira- tory Total Deaths
			Influenza.	Pneumonia and Broncho- Pneumonia	Bronchitis.		
JANUARY 7 .....	323	19.5	1	60	43	113	34.9
14 .....	296	17.9	8	44	34	81	27.4
21 .....	288	17.4	2	55	35	93	32.3
28 .....	299	18.1	4	56	29	85	28.3
FEBRUARY 4 .....	288	17.4	6	54	33	90	31.3
11 .....	290	17.5	5	63	39	104	36.0
18 .....	290	17.5	4	49	41	92	31.3
25 .....	238	14.4	5	46	27	79	33.3
MARCH 3 .....	247	14.9	1	29	33	65	26.3
10 .....	227	13.7	3	29	27	62	27.3
17 .....	248	15.0	3	30	24	56	22.3
24 .....	247	14.9	—	48	29	79	32.3
31 .....	198	12.0	—	31	13	42	21.3
	3,479	16.7	42	594	410	1,041	29.3
APRIL 7 .....	181	10.9	1	28	17	46	25.3
14 .....	225	13.6	1	27	21	49	21.3
21 .....	213	12.9	2	13	19	34	16.3
28 .....	214	12.9	2	22	25	49	23.3
MAY 5 .....	193	11.7	2	10	17	31	16.3
12 .....	176	10.6	2	28	8	37	21.3
19 .....	186	11.2	—	19	16	39	21.3
26 .....	215	13.0	1	26	17	47	21.3
JUNE 2 .....	167	9.8	2	16	19	36	21.3
9 .....	220	13.0	—	26	13	45	20.3
16 .....	184	10.9	—	23	16	41	22.3
23 .....	171	10.1	1	11	14	25	14.3
30 .....	170	10.1	1	16	7	27	15.3
	2,515	11.6	15	265	209	506	20.3
JULY 7 .....	172	10.2	—	17	13	31	18.3
14 .....	164	9.7	—	20	6	31	18.3
21 .....	175	10.4	—	11	9	21	12.3
28 .....	193	11.4	2	21	13	35	18.3
AUGUST 4 .....	157	9.3	1	13	6	19	12.3
11 .....	175	10.4	—	18	8	26	14.3
18 .....	164	9.7	1	11	11	24	14.3
25 .....	162	9.6	1	9	12	21	13.3
SEPTEMBER 1 .....	161	9.5	—	9	9	20	12.3
8 .....	175	10.4	2	16	8	24	14.3
15 .....	180	10.7	2	11	13	25	14.3
22 .....	177	10.5	1	14	16	32	18.3
29 .....	189	11.2	1	14	7	25	13.3
	2,244	10.4	11	184	131	334	14.3

1928. Week ending	Total Deaths.	Weekly Death Rate per 1,000 of Estimated Population	NUMBER OF DEATHS FROM			Total Respira- tory Deaths.	Percentage Proportion of Respira- tory to Total Deaths.
			Influenza.	Pneumonia and Broncho- Pneumonia	Bronchitis.		
OCTOBER 6 .....	214	12·7	1	14	6	24	11·2
13 .....	186	11·0	—	16	19	37	20·0
20 .....	189	11·2	2	23	5	29	15·8
27 .....	178	10·5	7	9	12	25	14·0
NOVEMBER 3 .....	178	10·5	3	11	10	23	12·9
10 .....	194	11·5	2	19	12	36	18·5
17 .....	202	12·0	2	23	8	36	17·8
24 .....	204	12·1	2	13	12	28	13·7
DECEMBER 1 .....	172	10·2	—	15	12	28	16·3
8 .....	233	13·8	1	33	15	51	22·0
15 .....	216	12·8	3	40	16	61	28·3
22 .....	259	15·3	1	56	18	79	30·6
29 .....	246	14·6	3	47	21	68	27·6
31 .....	77	16·6	2	16	10	26	33·7
	2,748	12·6	29	335	176	551	20·0
Total 12 months ...	10,986	12·7	97	1,378	926	2,432	22·1

### PUBLIC HEALTH (INFECTIOUS DISEASES) REGULATIONS, 1927.

The following statement shows the number of notifications received under the regulations and the number of deaths during 1927 and 1928 :—

	1927.		1928.	
	Cases.	Deaths.	Cases.	Deaths.
Acute Pneumonia ... ..	2,394	1,560	2,864	1,419
Malaria ... ..	64	3	77	5
Trench Fever ... ..	—	—	—	—
Dysentery ... ..	8	6	4	3
	2,466	1,569	2,945	1,427

Enquiry was made into all these cases; 1,767 cases of influenzal pneumonia were visited and 34 received assistance from nurses appointed for the purposes, 154 revisits being made.

### DYSENTERY.

During 1928 four cases of dysentery were reported in the city in addition to cases which were brought into the Port of Liverpool on shipboard. Dysentery was formerly prevalent in Liverpool, as many as 233 deaths having been registered from this cause in one year. Many of the cases reported in recent years are persistent infections acquired abroad on military service or otherwise. Three of the cases proved fatal.

It is probable that some of the deaths registered as from diarrhœa and enteritis are really deaths from dysentery.

### DIGESTIVE DISEASES AND DIARRHŒA.

The following table shows the mortality from digestive diseases—including diarrhœa—in the City of Liverpool during the last 58 years :—

TABLE I.

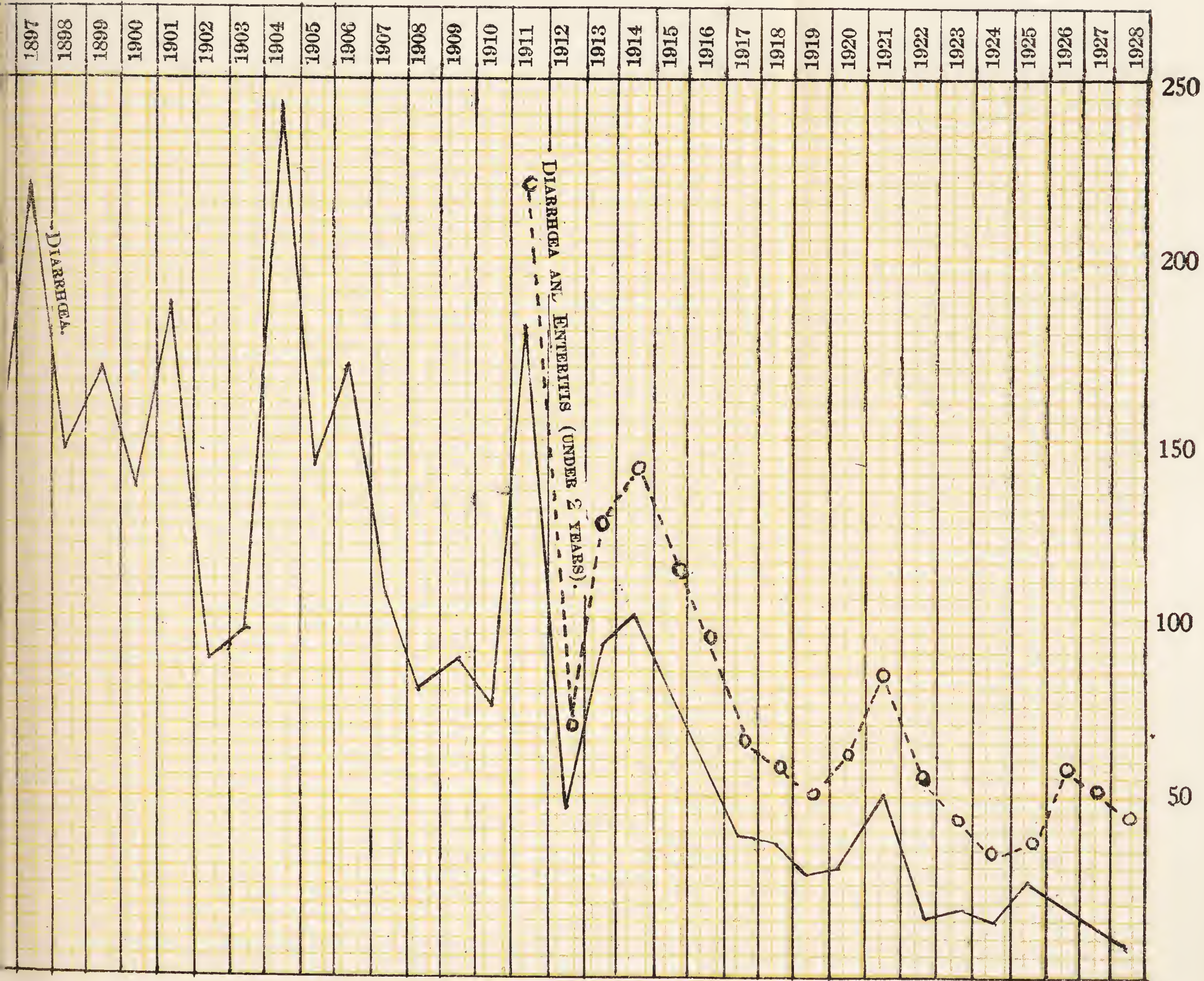
		Actual Deaths.	Deaths expressed as a percentage of deaths from all causes.	Death-rate per 1,000 population.	Death-rates as a percentage of the 1871-1880 rate.
1871-1880 ...	...	14,747	10·0	2·8	100·0
1881-1890 ...	...	13,186	9·4	2·4	85·7
1891-1900 ...	...	18,491	12·7	3·0	107·2
1900-1910 ...	...	18,163	12·0	2·5	89·3
1911-1920 ...	...	12,282	8·9	1·59	56·7
1921 ...	...	1,120	9·5	1·37	48·9
1922 ...	..	673	5·6	0·82	29·3
1923 ...	...	763	6·7	0·92	32·8
1924 ...	...	703	6·2	0·84	30·0
1925 ...	...	852	7·1	1·01	36·1
1926 ...	...	952	8·2	1·12	40·0
1927 ...	...	794	6·7	0·93	33·2
1928 ...	...	784	6·8	0·90	32·1

# CITY OF LIVERPOOL.

DIARRHŒA DEATH RATES (ALL AGES), PER 100,000 POPULATION, 1896-1928

TOGETHER WITH THE COMBINED RATE FROM DIARRHŒA

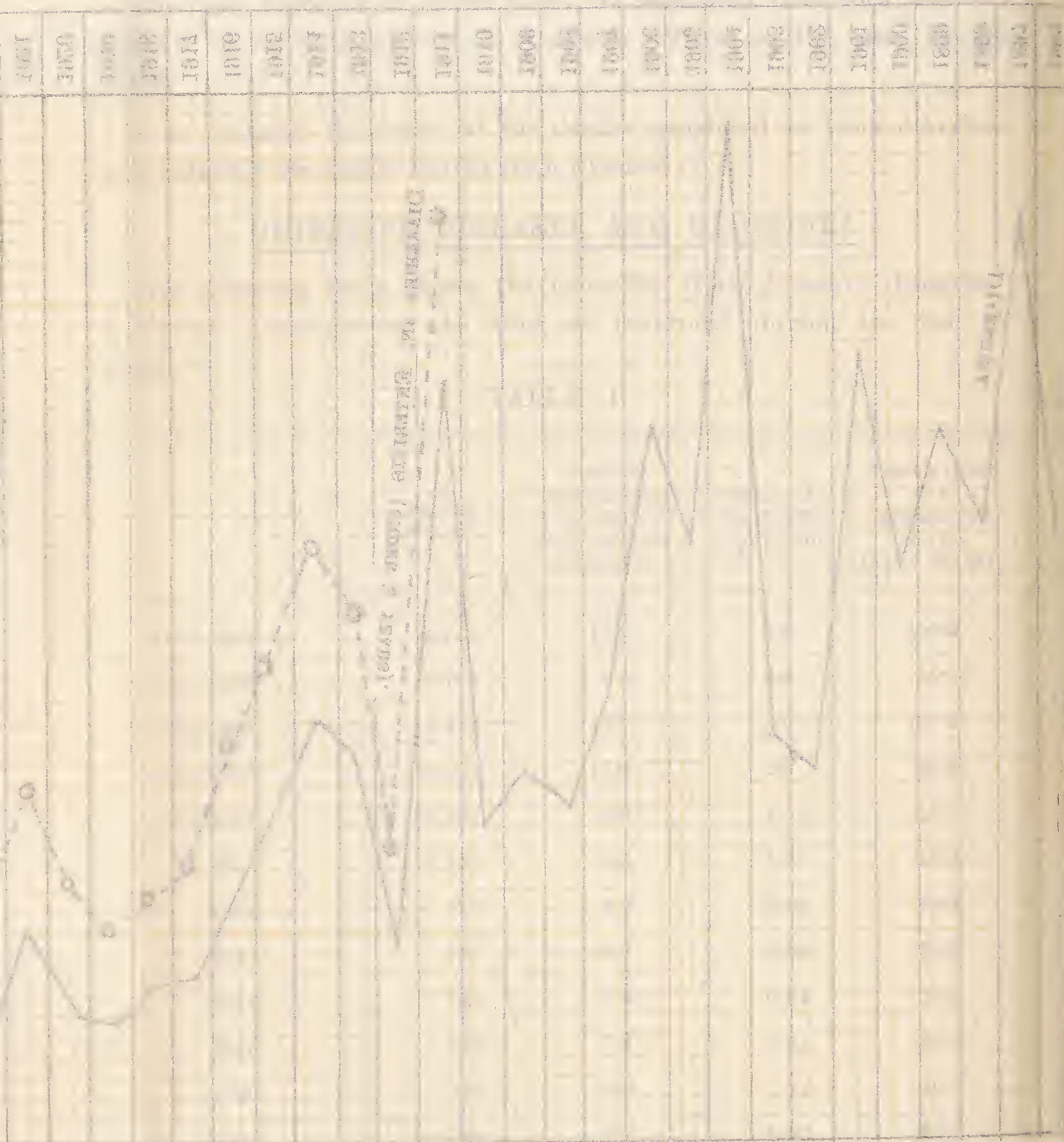
AND ENTERITIS (UNDER 2 YEARS), FOR 1911-1928.



# CITY OF LIVERPOOL

FORBIDDEN TO BE USED FOR ANY OTHER PURPOSE THAN THAT FOR WHICH IT WAS DESIGNED  
 TOGETHER WITH THE COMBINED RATE FROM DISTRICT

AND EXTENDING (ORDER 3 1911) FOR 1911-1928



The deaths from digestive diseases, which had been very numerous prior to 1871, fell in the penultimate decade of last century, but rose again in the last decade. Since the early years of the present century there has been a marked decline in the number of deaths. This was especially so during the latter years of the war.

### DEATHS FROM DIARRHŒA AND ENTERITIS.

Diarrhœa and enteritis form a large part of the deaths from digestive diseases. Of these deaths approximately two-thirds occur in infants under one year of age. The age distribution of deaths from diarrhœa and enteritis during the past 58 years is shown in the next table.

TABLE II.

AVERAGE NUMBERS.						PER CENT.			
	Under 1 year	1-2 years	2-5 years	Over 5 years	Total	Under 1 year	1-2 years	2-5 years	Over 5 years
1871-1880 ...	559·9	170·4	36·3	79·4	846·0	66·2	20·1	4·3	9·4
1881-1890 ...	361·5	121·0	35·2	58·0	575·7	62·7	21·0	6·1	10·1
1891-1900 ...	577·4	167·7	40·8	60·1	846·0	68·0	19·8	4·8	7·2
1901-1910 ...	591·7	207·9	45·3	35·3	880·2	67·2	23·6	5·2	4·0
1911-1915 ...	619·6	285·4	58·6	43·2	1006·8	61·3	28·3	5·8	4·3
1916-1919 ...	312·2	104·5	31·2	63·5	511·5	61·0	20·4	6·1	12·4
1920 ...	382	61	17	29	489	79·1	12·5	3·5	5·9
1921-1925 ...	315·2	93·6	20·8	50·2	480·4	65·5	19·5	4·3	10·4
1926 ...	413	109	21	33	581	71·1	18·8	3·6	6·5
1927 ...	283	67	14	33	397	71·3	16·9	3·5	8·3
1928 ...	282	65	21	23	391	72·1	16·6	5·4	5·9

Down to the year 1915 there was a decline in the proportion of deaths from diarrhœal diseases in persons over five years of age, but otherwise there was very little variation in the ages at death. Owing to the rapid rise in the birth rate in 1920 the proportions at different ages were quite abnormal. In 1921, however, the proportions of deaths at different ages returned to the normal pre-war distribution. In 1928 nearly three-quarters of the deaths were of infants during their first year of life.

In 1928 the mortality from diarrhœa and enteritis at all ages amounted to 391, of which number 347 were under two years of age, equal to a rate of 45 per 100,000 of the population. A noticeable feature of recent years has been that the height of the summer epidemic, which formerly occurred in August, about the 31st week of the year, has occurred progressively later and later in the year. In 1922 the peak of the epidemic, if it may so be termed, was not reached until October, namely, in the 41st week; in 1928 the maximum number of deaths was reported on the fortieth week. The very large diminution in the size of the epidemic in recent years and its concurrent retardation are well shown when comparison is made with the mortality in the year 1904. In that year the peak of the epidemic was reached in the thirty-third week, no fewer than 259 deaths from diarrhœa alone being recorded in that week, as against 23 the greatest number in any week during 1928, i.e., almost exactly one-eleventh of the number recorded 25 years ago.

The mortality rate per 1,000 of the births registered in the City during the last two years from diarrhœa and enteritis (under 2 years of age) was 9·9. The mortality in the several districts of the city is shown in the subjoined table:—

TABLE III.

		Registered Births		Deaths.		Death Rate per 1000 births registered during the current and preceding years.			
		1927-28.		1928.					
						1928.		1927.	
Exchange	...	...	5,273	...	87	...	16·5	...	17·7
Abercromby	...	...	1,948	...	21	...	10·9	...	11·8
Everton	...	...	6,164	...	57	...	9·3	...	10·9
Kirkdale	...	...	3,069	...	30	...	9·9	...	11·1
Edge Hill	...	...	3,819	...	25	...	6·5	...	5·5
Toxteth	...	...	5,090	...	38	...	7·5	...	7·4
Walton	...	...	3,048	...	19	...	6·2	...	6·4
West Derby	...	...	3,944	...	45	...	11·4	...	4·3
Wavertree	...	...	3,290	...	19	...	5·8	...	4·1
Sefton Park	...	...	931	...	2	...	2·1	...	2·0
Fazakerley	...	...	1,312	...	—	...	—	...	5·0
Woolton	...	...	252	...	4	...	15·5	...	6·3
		38,140		347		9·9		9·9	

NOTE.—All deaths occurring in public institutions have been transferred to the district from which the patients came.

The corresponding rates for the whole city during the last five years were 8·6, 7·7, 10·3, 13·3 and 9·9 per 1,000 births registered in the preceding two years.

Of the 347 deaths under 2 years of age, the majority, namely, 214, took place in public institutions, as shown in the following table :—

TABLE IV.

DEATHS FROM DIARRHŒA AND ENTERITIS IN INSTITUTIONS DURING 1928.

Alder Hey Hospital	...	...	...	...	159
Royal Liverpool Children's Hospital...	...	...	...	...	21
Walton Institution	...	...	...	...	5
Mill Road Institution	...	...	...	...	6
Toxteth Institution	...	...	...	...	1
David Lewis Northern Hospital	...	...	...	...	8
Mill Lane Hospital	...	...	...	...	1
Stanley Hospital	...	...	...	...	2
Royal Southern Hospital	...	...	...	...	8
Belmont Road Institution	...	...	...	...	2
Olive Mount Homes	...	...	...	...	1
					<hr/> 214 <hr/>

#### ENQUIRY INTO FATAL CASES (under 2 years of age).

Since 1926 enquiry has been made into all deaths from diarrhœa and enteritis under two years of age. Up till 1911 the Registrar General classified deaths from "diarrhœa" separately from those included under the heading "enteritis." Since that date there has been included under the rubric "diarrhœa and enteritis under two years of age" a somewhat miscellaneous group of deaths.

Formerly many deaths occurred from an acute infective disease, or group of diseases, of which the predominating symptoms were an acute onset with diarrhœa and vomiting, often preceded by convulsions, and terminating rapidly in children under two years of age, from depletion of the body fluids. This disease assumed the form of an

annually recurring summer epidemic, which had a well-marked maximum in August or September. The diagram facing page 52 shows the great reduction in the deaths caused by this condition in recent years.

An endeavour has been made to separate from the total number of deaths from diarrhœa and enteritis under two years of age, 347 in all, those cases in which a fairly pronounced acute or sub-acute diarrhœa was present; only 234, or roughly two-thirds, were of this nature.

Upon inquiry it was found that in 42 cases there was a predominant history of wasting or marasmus, in 16 of which diarrhœa was entirely absent. In 19 cases the onset of enteritis had been preceded by an attack of pneumonia, measles, etc. In a further 19 instances in which convulsions occurred in children whose deaths were ascribed to enteritis, there was no diarrhœa. In five of these the convulsions had been present from birth, and in one such case were definitely associated with birth injuries. Congenital conditions, as mentioned below, accounted for a number of deaths in which diarrhœa did not occur. In 42 cases, therefore, the symptom of diarrhœa was entirely absent.

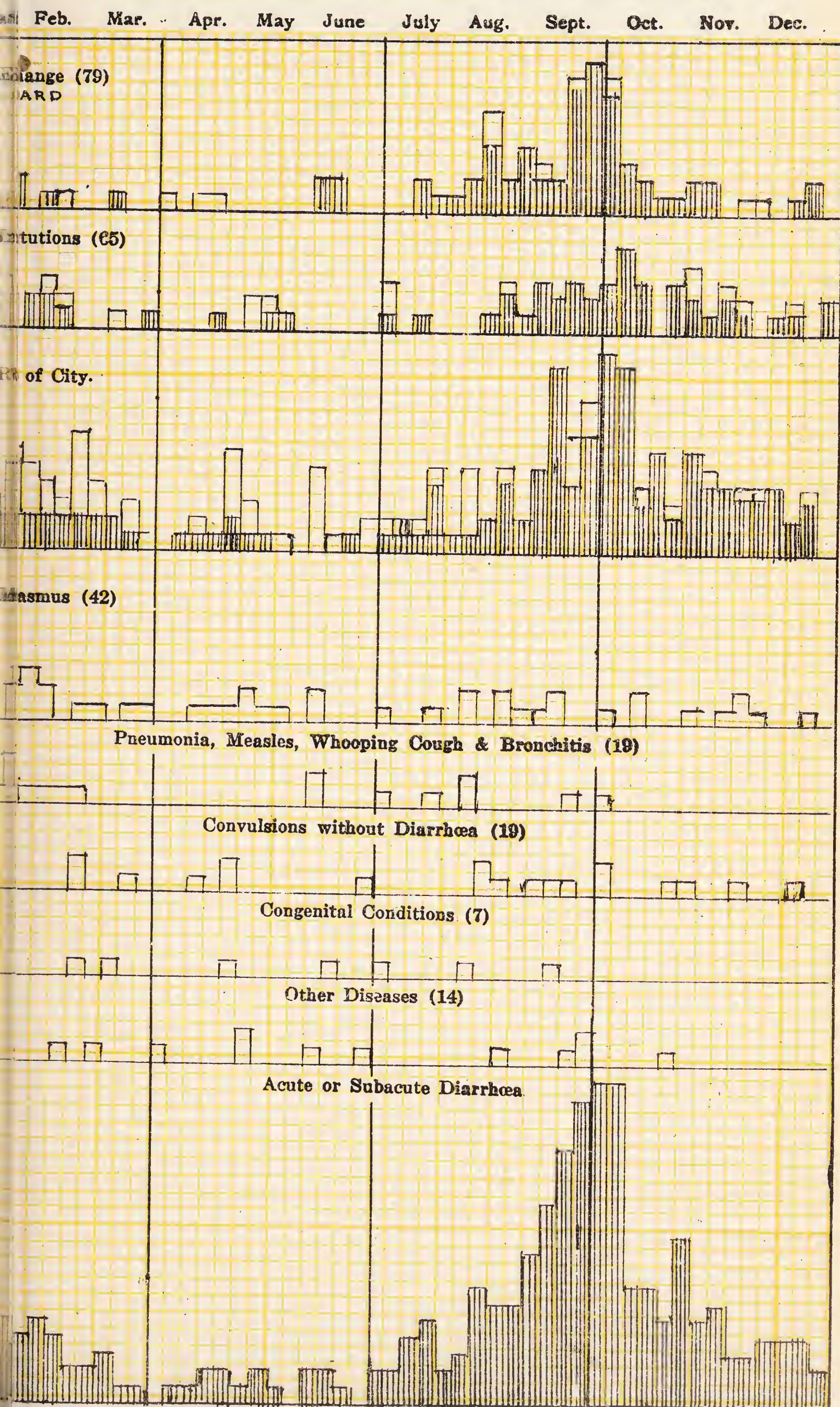
Reference to the graph facing will show that whilst the deaths from acute or sub-acute diarrhœa presented the characteristic autumnal outbreak, the deaths referred to in the preceding paragraph showed no special preference for any season of the year.

#### CONGENITAL DISEASE OR WEAKNESS.

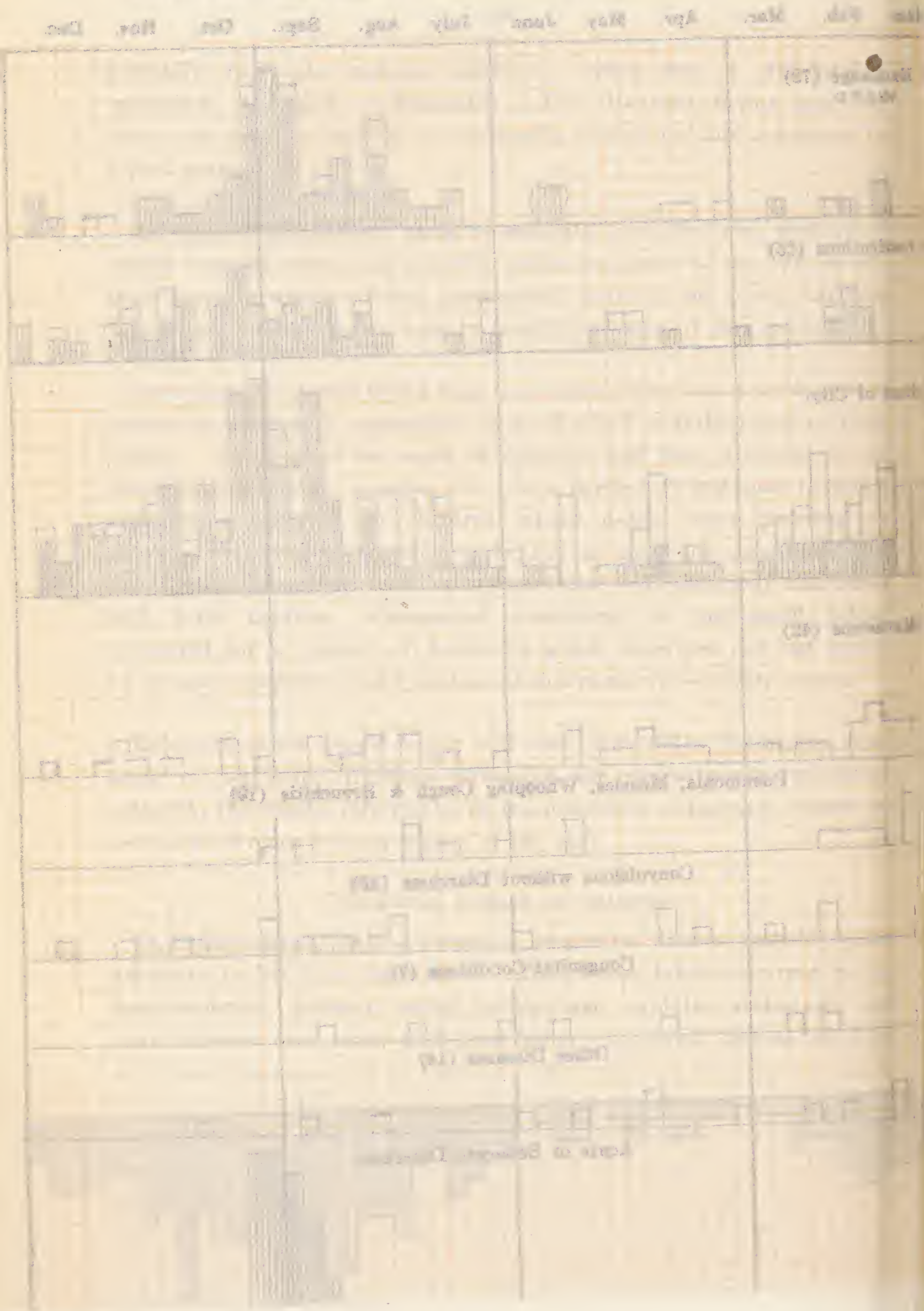
In 12 instances there was present a congenital disease probably quite adequate in itself to cause death. Thus spina bifida occurred twice, hydrocephalus, melaena, rectal hæmorrhage, syphilis, atelectasis and heart disease once each, and some other congenital disease on four occasions, the ages at death being 3 days, 12 days, 2 weeks and 1 month in these latter. Spasmodic pyloric stenosis may have been present in several of these cases. Deaths in the first month of life are rarely due to the acute infective disease. Diarrhœa was absent in 7 cases, and was probably only of secondary importance in the remainder. In a further 12 cases the infant was known to have been premature, and in 18 cases the infant was a twin. In 31 cases the infant was said to have been delicate from birth.

# CITY OF LIVERPOOL.

DEATHS FROM DIARRHŒA & ENTERITIS (UNDER 2 YEARS) IN 1928.  
DISTINGUISHING DEATHS FROM ACUTE DIARRHŒA FROM THOSE IN WHICH THAT SYMPTOM WAS ABSENT OR SECONDARY TO SOME OTHER CONDITION.



DEATHS FROM DIARRHEA & ENTERITIS (UNDER 5 YEARS) IN 1928.  
 DISTINGUISHING DEATHS FROM ACUTE DIARRHEA FROM THOSE IN WHICH THE  
 SYMPTOM WAS FIRST OF SECONDARY TO SOME OTHER CONDITION.



## OTHER ASSOCIATED DISEASES.

In a number of the deaths there was evidence of respiratory disease, which in many cases preceded, though in other cases was subsequent to, the onset of diarrhœa. Thus the following diseases were found to have recently occurred or were given on the death certificates:—Measles, 2 cases, whooping cough 4 cases, pneumonia or broncho-pneumonia 18 cases, bronchitis 7 cases.

Of skin diseases impetigo occurred five times and pemphigus once. Rickets was known to have been present in three cases, in one of which tetany was also present.

Surgical diseases not uncommonly preceded the enteritis; in 11 cases the child was admitted to hospital on account of some condition necessitating operation; otorrhœa, a condition known to cause diarrhœa, was present in a further three cases, thrush in one, and a fractured thigh in another.

At least four of the deaths were probably due to tuberculosis; in one case the child's death was almost certainly due to acute miliary tuberculosis.

## SOCIAL CONDITIONS.

Thirteen, at least, of the children were illegitimate, and the baby having been admitted to some institution at an early age had necessarily been weaned for this purpose. In no fewer than 21 of the infants who died in institutions the parents could not be traced at the address given. In a number of cases the illness of the child followed the illness of the mother. Thus the mother was insane in two cases, and had pneumonia, mastitis, surgical operation or died in childbirth in two cases, and nephritis in one case, such severe illness inevitably entailing the weaning of the child.

## METHOD OF FEEDING.

The great majority of the children were artificially fed in whole or in part. Artificial feeding not only predisposes the child to a fatal

infection, rendering it more susceptible, but provides the medium, usually milk, by which the infection is conveyed. Two examples pointing to the great importance of the actual infection of the milk may be quoted :—

Case I.—Breast-fed from birth up till  $4\frac{1}{2}$  months. At  $4\frac{1}{2}$  months the mother stated that her milk left her, and she gave her baby cow's milk and water. After a week of this method of feeding diarrhœa and vomiting set in. Baby died after a week's illness.

Case II.—Breast-fed for 3 weeks. Mother then went to work in the Isle of Man, and baby was weaned; two days later diarrhœa began. Baby died after 4 days' illness.

These are clearly cases where the infection was derived through the milk. Babies should not be weaned during the season of the year when diarrhœa is prevalent—July to October—if this can be avoided.

TABLE V.

## DIARRHOEA AND ENTERITIS (under 2 years of age), 1921–1928.

DEATH-RATE PER 1000 BIRTHS REGISTERED DURING THE YEAR OF OBSERVATION AND THE PRECEDING YEAR. DEATHS IN INSTITUTIONS ARE ALL REFERRED TO THE DISTRICT OF RESIDENCE.

District.	1921	1922	1923	1924	1925	1926	1927
Scotland ...	20·0	8·8	13·6	14·9	31·1	29·4	17·7
Exchange ...	37·1	12·4	17·1				
Abercromby ...	16·5	8·1	13·8		14·5	12·7	11·8
Everton ...	15·8	6·3	8·4		8·8	13·4	10·9
Kirkdale ...	9·8	4·5	8·0	5·1	11·3	13·4	11·1
Edge Hill ...	12·8	7·3	7·9	6·9	6·8	9·9	5·5
Toxteth ...	15·2	6·5	8·7	7·1	9·5	9·9	7·4
Walton ...	7·8	3·5	9·4	5·0	3·8	14·0	6·4
West Derby ...	7·5	4·2	3·5	6·4	3·5	6·0	4·3
Wavertree ...	3·3	2·5	7·6	4·7	5·0	6·4	4·1
Sefton Park ...	4·8	2·6	0·9	1·8	3·9	2·1	2·0
Garston ...	7·6	7·9	1·5	Included in Wavertree.			
Fazakerley ...	4·8	...	4·2	4·0	4·3	9·1	5·0
Woolton ...	6·2	3·3	2·6	...	15·2	30·9	6·3
WHOLE CITY	14·6	6·2	8·6	7·7	10·3	13·3	9·9
BIRTH RATE	26·8	26·1	24·9	24·6	23·3	23·3	22·2

TABLE VI.

DEATHS FROM DIARRHŒA AND ENTERITIS  
UNDER TWO YEARS.

DISTRICTS.	QUARTERS.								YEAR 1928.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	Total
change .....	4	6	6	4	20	16	16	15	46	41	87
ercromby .....	4	...	1	3	2	8	...	3	7	14	21
erton .....	5	4	5	2	7	9	13	12	30	27	57
ekdale .....	4	3	1	...	5	3	7	7	17	13	30
ge Hill .....	4	4	...	...	8	5	2	2	14	11	25
xteth .....	11	1	2	2	12	4	4	2	29	9	38
lton .....	2	...	3	...	5	2	4	3	14	5	19
st Derby .....	6	5	5	3	5	5	14	2	30	15	45
vertree .....	3	3	...	1	1	2	7	2	11	8	19
xteth East .....	1	...	...	...	...	...	1	...	2	...	2
akerley .....	...	...	...	...	...	...	...	...	...	...	...
olton .....	1	1	...	...	...	1	...	1	1	3	4
City .....	45	27	23	15	65	55	68	49	201	146	347

## AGES AT DEATH.

Under 1 year	...	...	...	...	...	...	282
Under 2 years	...	...	...	...	...	...	65
TOTAL	...	...	...	...	...	...	<u>347</u>

## DEATHS FROM DIARRHOEA AND ENTERITIS SEPARATELY.

	QUARTERS.				YEAR.
	1ST.	2ND.	3RD.	4TH.	
rhœa .....	10	6	23	25	64
ritis .....	62	32	97	92	283

—Deaths in public institutions are transferred to the districts from which the patients came.

## MODE OF INFECTION.

It seems probable that about two-thirds of the deaths included under the heading diarrhœa and enteritis were from an acute or sub-acute primary infection of the stomach and bowels. Enquiries were made in all cases, but in only 13 instances, apart from children living in institutions, was contact with a preceding case in the household established. The sickness in older children and adults is, however, often of a trivial character and liable to be overlooked.

The cases are notably more prevalent in the central portions of the town, more especially in the Exchange registration district, as will be seen by reference to the diagram facing page 56 and to Table I. Some parts of the city escape almost entirely from this disease. The consistent efforts to reduce the mortality have not, however, been without effect, and the rate recorded in 1928 for Exchange (16·5) is little more than that recorded for the whole city (14·6) in 1921. The annual increase in the late summer and autumn coincides with the hottest part of the year, and whilst climatic changes and alterations in the character of the artificial food given to the infant undoubtedly predispose to the infection there can be little doubt that the seasonal increase of infection is mainly an increased carriage of infection by flies. The fatal issue was, however, predisposed to, in a large number of cases, by the various diseases and causes of ill-health set forth in preceding paragraphs.

Inquiry was made in all fatal cases as to the prevalence of flies at the home at the time of onset of illness. For a number of years wherever an excessive prevalence of flies is reported, this is referred to the sanitary department for investigation. Excessive prevalence of flies coincides with outbreak of diarrhœa in epidemic form, as has been repeatedly shown in former reports of the Medical Officer.

The experience of previous years points strongly to the importance of flies as carriers of infection and that collections of stable manure form the most important breeding places for these insects. Regular visits of inspection are paid to stables and the occupiers informed of the desirability of regular weekly removals of manure (see page 16). The following notice has been issued to the owners of stables in recent years with the object of securing the frequent removal of manure from the latter :—

**NOTICE.****REMOVAL OF MANURE FROM STABLES.**

The Health Committee are very desirous that Manure from Stables should be removed with as little delay as possible, and with this object in view, arrangements have been made with the City Engineer for its speedy removal.

On application to the City Engineer, Municipal Offices, Dale Street, Manure will be removed from stable yards as often as required, free of charge.

## NOTIFICATION OF INFECTIOUS DISEASE.

---

The following is a list of the diseases notifiable in the City of Liverpool during 1928 :—

Anthrax	Membranous Croup
Anterior Poliomyelitis	Ophthalmia Neonatorum
Cerebro-spinal Fever	Paratyphoid Fever
Cholera	Plague
)Chickenpox	Pneumonia, Acute Influenzal
Continued Fever	Pneumonia, Acute Primary
Diphtheria	Polioencephalitis, Acute
Dysentery	Puerperal Fever
Enteric (Typhoid) Fever	Puerperal Pyrexia
Erysipelas	Relapsing Fever
Encephalitis Lethargica, Acute	Scarlet Fever or Searlatina
)German Measles	Smallpox
)Measles	Tuberculosis (all forms)
Malaria	Typhus Fever

The numbers and monthly distribution of notifications received by the Medical Officer of Health during the past year were as follows :—

	1928.
January ... ..	1,120
February ... ..	1,197
March ... ..	1,226
April ... ..	1,114
May ... ..	1,493
June . ... ..	1,647
July ... ..	1,264
August ... ..	790
September ... ..	850
October ... ..	1,145
November ... ..	1,333
December ... ..	1,443
	<hr/> 14,622 <hr/>

---

(1) Measles and German Measles ceased to be compulsorily notifiable on 31st October, 1920, but a system of voluntary notification has been continued as is also the case with Chickenpox.

The diseases were notified as follows :—

							<u>1928.</u>
Smallpox ...	...	...	...	...	...	...	3
Scarlet Fever ...	...	...	...	...	...	...	2,098
Enteric Fever ...	...	...	...	...	...	...	49
Paratyphoid Fever ...	...	...	...	...	...	...	10
Puerperal Fever ...	...	...	...	...	...	...	46
Puerperal Pyrexia ...	...	...	...	...	...	...	162
Continued Fever ...	...	...	...	...	...	...	3
Diphtheria and Croup ...	...	...	...	...	...	...	1,868
Erysipelas... ...	...	...	...	...	...	...	642
Anthrax ...	...	...	...	...	...	...	14
Cerebro-spinal Fever ...	...	...	...	...	...	...	18
Acute Poliomyelitis ...	...	...	...	...	...	...	5
Measles and German Measles ...	...	...	...	...	...	...	4,813
Ophthalmia Neonatorum ...	...	...	...	...	...	...	545
Pneumonia and Influenzal Pneumonia ...	...	...	...	...	...	...	2,996
Malaria ...	...	...	...	...	...	...	78
Dysentery ...	...	...	...	...	...	...	5
Encephalitis Lethargica... ...	...	...	...	...	...	...	62
Chickenpox ...	...	...	...	...	...	...	1,204
Polioencephalitis ...	...	...	...	...	...	...	1
							<hr/>
							14,622
							<hr/>

The following table shows the number, monthly distribution, and nature of cases of infectious disease coming under the notice of the Medical Officer of Health during the year 1928 :—

	January	February	March	April	May	June	July	August	September	October	November	December	TOTALS	Removed to hospital
Smallpox.	1	...	1	...	...	...	...	...	...	...	...	...	2	2
Typhoid.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever.	1	2	...	1	...	2	3	4	7	6	3	1	30	26
Scarlet Fever.	174	174	217	166	162	191	121	93	241	200	199	255	2193	1853
Rubeola and German Measles.	122	202	492	447	738	1218	680	282	260	274	546	764	6025	828
Diphtheria and Croup.	186	157	163	131	155	167	133	82	175	161	167	225	1902	1768
Intermittent Fever.	3	8	6	2	1	7	1	2	5	3	4	9	51	45
Intermittent Pyrexia	9	11	11	19	14	16	16	10	10	6	6	13	141	106
Erysipelas.	55	62	64	58	46	48	34	47	45	64	43	57	623	263
Cerebro-spinal Fever.	1	...	4	...	1	2	3	...	5	...	3	2	21	19
Poliomyelitis and Polioencephalitis	1	1	1	...	1	...	...	1	...	...	1	...	6	2
Conjunctivitis	44	34	44	34	42	66	52	44	40	37	58	50	545	34
Pneumonia & Influenza	392	449	331	170	145	218	132	96	187	218	153	373	2864	1196
Malaria.	11	13	6	5	5	9	4	4	4	6	6	4	77	26
Dysentery.	...	...	...	...	1	1	1	1	...	...	...	...	4	1
Encephalitis Lethargica.	7	8	5	8	3	4	3	2	3	4	3	4	54	34
Whooping Cough.	415	383	484	195	236	159	44	66	71	48	108	104	2313	212
Erysipeloid.	—	...	3	1	1	2	...	...	...	...	...	...	7	7
Chickenpox	208	122	169	164	237	393	151	93	147	224	217	321	2446	245
Monthly Totals ...	1630	1626	2001	1401	1788	2503	1378	827	1200	1251	1517	2182	19304	6667

The number of patients removed to hospital includes those admitted to the general hospitals, as well as those admitted to the city infectious diseases hospitals.

The following table gives a summary of cases of infectious disease coming under the notice of the Medical Officer of Health during the last six years:—

DISEASE.	1923	1924	1925	1926	1927	1928
Smallpox .....	1	1	—	—	1	2
Plague .....	—	—	—	2	—	—
Typhus Fever .....	—	—	—	—	—	—
Enteric Fever .....	16	49	35	42	67	30
Scarlet Fever .....	2,307	3,790	3,561	2,244	1,640	2,193
Measles and German Measles	11,089	5,709	11,202	8,694	10,606	6,025
Diphtheria .....	993	1,105	1,504	1,519	1,664	1,902
Puerperal Fever.....	43	65	56	64	51	51
Erysipelas .....	395	384	525	567	611	623
Cerebro-spinal Fever .....	8	13	24	16	25	21
Poliomyelitis and Polioeu- cephalitis	39	14	4	19	15	6
Ophthalmia Neonatorum ...	707	690	703	649	636	545
Anthrax .....	4	6	5	4	9	7
Encephalitis Lethargica .....	111	189	108	114	69	54
Whooping Cough .....	2,261	2,321	2,274	1,971	1,988	2,313
Malaria .....	36	48	52	56	64	77
Dysentery .....	8	7	8	8	8	4

Table shewing the deaths from infectious disease occurring during the last six years :—

DISEASE.	1923	1924	1925	1926	1927	1928
Smallpox .....	—	—	—	—	—	—
Plague .....	—	—	—	1	—	—
Dysphus Fever.....	—	—	—	—	—	—
Enteric Fever .....	6	7	5	6	10	4
Scarlet Fever .....	43	63	93	24	12	19
Measles and German Measles	356	148	406	221	345	177
Diphtheria .....	87	71	106	112	90	100
Influenza.....	114	191	178	141	268	99
Puerperal Fever.....	16	22	21	28	25	19
Erysipelas .....	27	18	24	30	24	22
Cerebro-spinal Fever .....	6	8	15	12	21	16
Polio-myelitis and Polio-encephalitis	6	4	1	5	2	5
Anthrax .....	2	—	2	2	1	2
Encephalitis Lethargica .....	36	22	44	29	25	24
Whooping Cough .....	156	169	227	188	125	269
Malaria... ..	—	5	3	4	3	5
Dysentery .....	5	—	4	5	6	3
Chickenpox.....	3	6	4	5	3	3

THE ANNUAL AVERAGE **NUMBER OF DEATHS** FROM THE PRINCIPAL ZYMOTIC DISEASES, DURING EACH OF THE LAST SIX DECENNIAL PERIODS, SHOWS THE DECLINE IN MOST OF THE FORMIDABLE FORMS OF INFECTIOUS DISEASE.

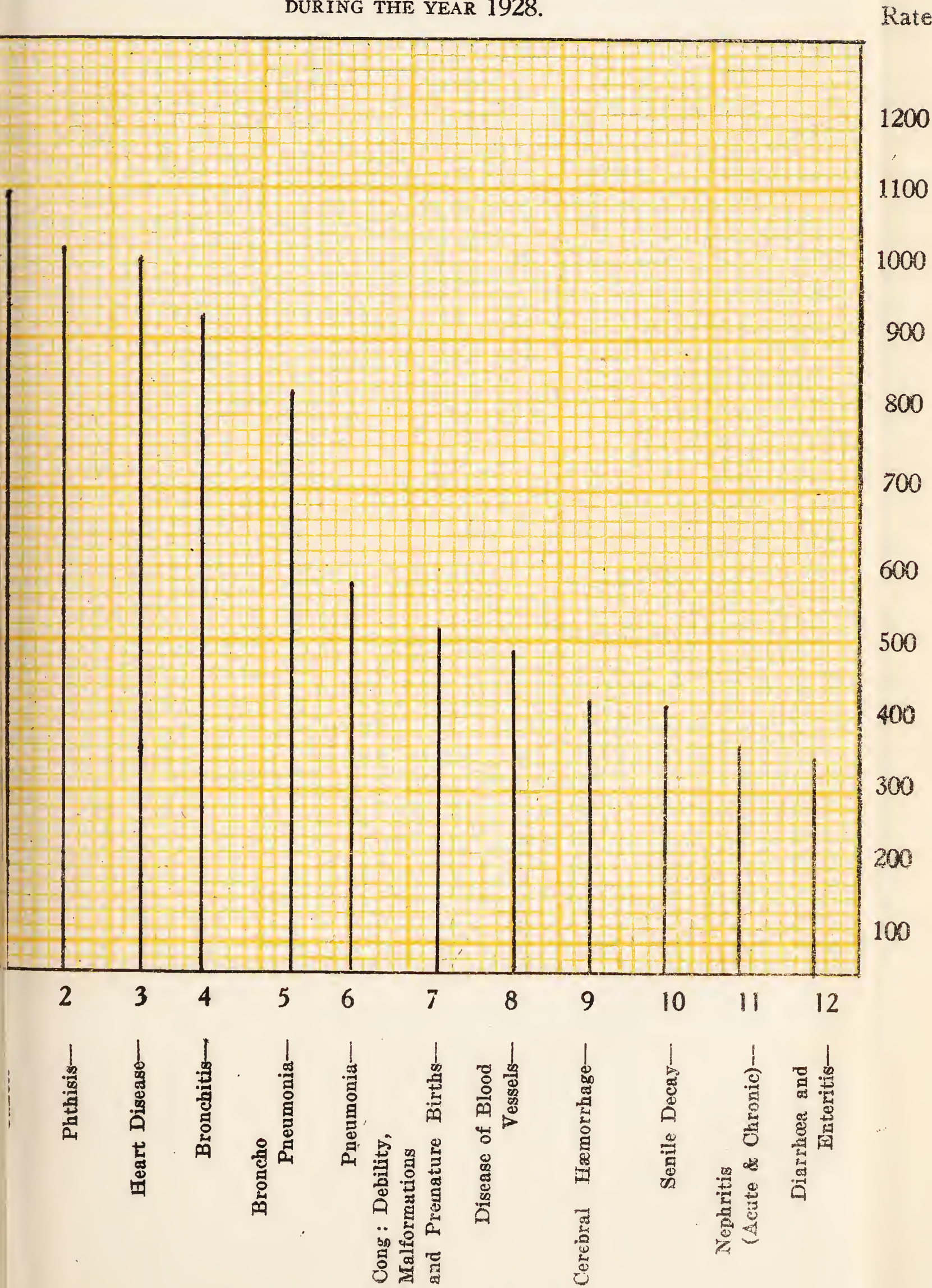
Years.	Smallpox.	Scarlet Fever.	Diphtheria.	Measles.	Whooping Cough.	Typhus Fever.	Enteric Fever.	Diarrhœa.
1866 to 1875	237·4	789·4	58·5	425·7	496·8	652·8	† —	995·3
1876 to 1885	90·8	421·2	65·7	517·8	472·3	238·0	126·4	658·4
1886 to 1895	8·8	257·5	76·7	399·5	322·4	37·1	153·0	600·6
*1896 to 1905	19·5	201·3	149·9	329·0	330·4	25·1	134·4	1,061·9
*1906 to 1915	0·3	141·6	112·6	438·0	296·7	5·7	50·3	848·0
1916 to 1925	0·4	69·4	136·6	300·6	195·6	0·2	8·6	254·4
*1928 .....	—	19	100	177	269	—	4	71

\* Including extended City area.

† Records not available.

# CITY OF LIVERPOOL.

COMPARATIVE VIEW OF TWELVE OF THE PRINCIPAL CAUSES OF DEATH  
DURING THE YEAR 1928.

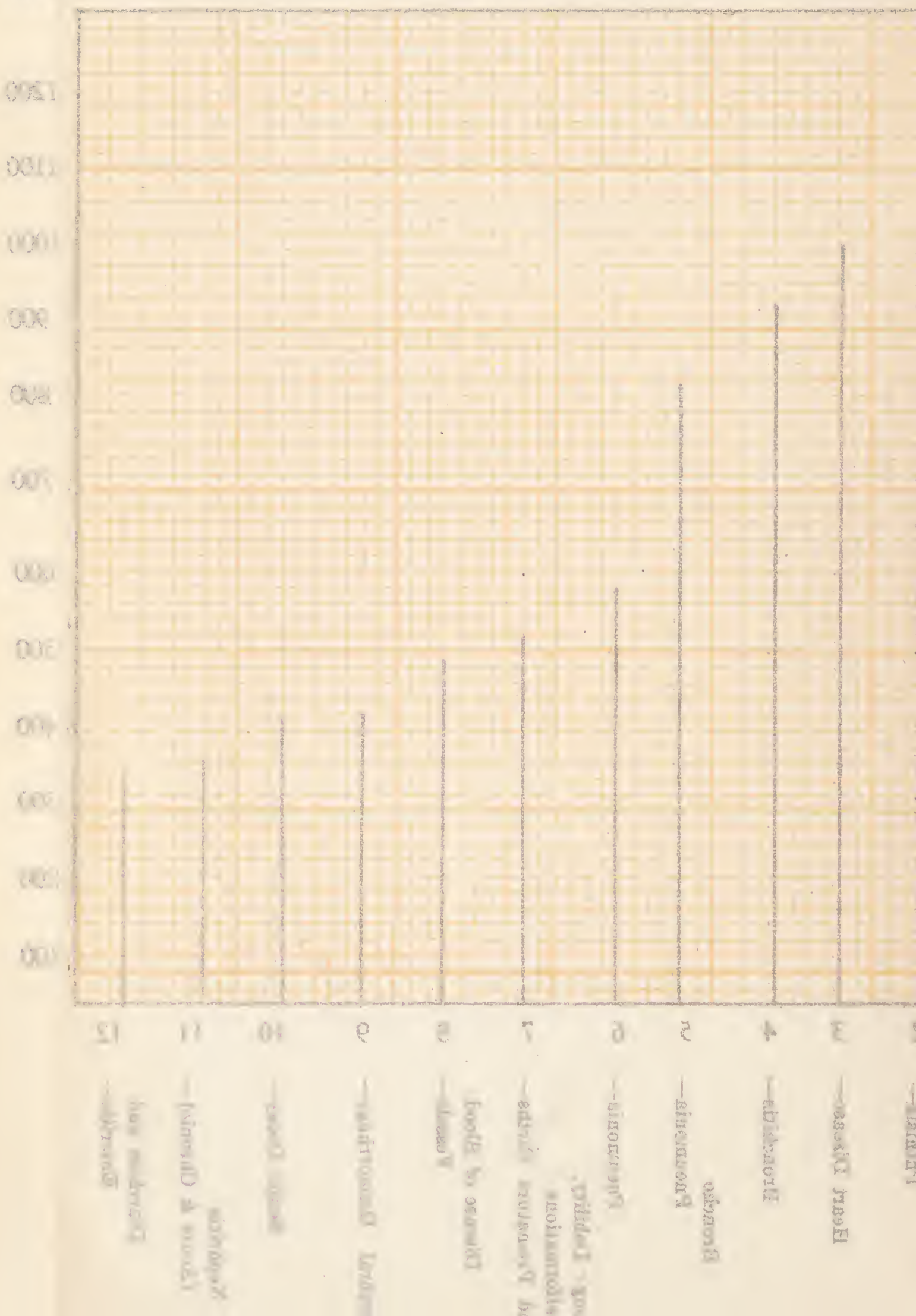


# CITY OF LIVERPOOL

ANNUAL VIEW OF THE PRINCIPAL CITIES OF ENGLAND

DURING THE YEAR 1928.

1928



ANNUAL AVERAGE **NUMBER OF DEATHS** FROM THE PRINCIPAL ZYMOTIC DISEASES  
DURING EACH OF THE LAST FIVE DECENNIAL PERIODS, DISTINGUISHING THOSE  
OF PERSONS ABOVE AND BELOW FIVE YEARS OF AGE.

YEARS.	SMALLPOX.		SCARLET FEVER.		DIPHTHERIA.		MEASLES.		WHOOPING COUGH.		TYPHUS FEVER.		ENTERIC FEVER.		DIARRHÆA.	
	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.
1876 to 1885	62.5	28.3	137.0	284.2	24.1	41.6	35.4	482.4	18.6	453.7	† 190.0	† 5.1	† 110.3	† 12.1	61.9	596.5
1886 to 1895	6.2	2.6	87.6	169.9	24.4	52.3	28.3	371.2	15.1	307.3	36.2	.9	142.0	11.0	60.2	540.4
*1896 to 1905	14.5	5.0	61.7	139.6	44.0	105.9	17.1	311.9	11.9	318.5	24.2	.9	128.4	6.0	53.6	1,008.3
*1906 to 1915	.3	—	50.9	90.7	41.5	71.1	23.9	414.1	9.2	287.5	5.5	.2	49.0	1.3	30.8	817.2
1916 to 1925	.4	—	28.4	41.0	47.7	88.9	13.5	287.1	6.5	189.1	.2	—	8.5	.1	11.8	242.6
*1928	—	—	8	11	35	65	6	171	—	269	—	—	4	—	5	66

† During the six years, 1880-1885.

\*\* Including extended City area.

The following table shows the number of deaths, the annual average death rate per 100,000 of the population from the undermentioned forms of disease during the last six decades, 1866 to 1925 and the year 1928 :—

DISEASE.		1866 to 1875.	1876 to 1885.	1886 to 1895.	1896† to 1905.	1906‡ to 1915	1916 to 1925	1928
	Average Population	493,405.	538,651.	536,974.	691 351.	749,267.	814,014.	866,000
Scarlet Fever	Total Deaths ...	7,894	4,212	2,575	2,013	1,416	694	
	Rate per 100,000 per annum.	159.9	78.1	47.9	29.1	19.0	8.5	
Typhus Fever	Total Deaths ...	6,528	2,380	371	251	57	2	
	Rate per 100,000 per annum.	132.2	44.1	6.9	3.6	0.8	0.2	
Enteric Fever	Total Deaths ...	*	1,264	1,530	1,344	503	86	
	Rate per 100,000 per annum.	—	21.5	28.4	19.3	6.7	1.5	
Measles	Total Deaths ...	4,257	5,178	3,995	3,290	4,380	3,006	
	Rate per 100,000 per annum.	86.2	96.1	74.3	47.5	58.6	36.9	
Whooping Cough	Total Deaths ...	4,968	4,723	3,224	3,304	2,967	1956	
	Rate per 100,000 per annum.	100.6	87.6	60.0	47.7	39.7	24.0	
Smallpox	Total Deaths ...	2,374	908	88	195	3	4	
	Rate per 100,000 per annum.	48.1	16.8	1.6	2.8	0.4	0.5	
Diphtheria	Total Deaths ...	2,129	2,434	1,655	1,955	1,239	1,366	
	Rate per 100,000 per annum.	42.4	45.7	30.8	28.2	16.5	16.9	
Phthisis	Total Deaths ...	16,476	13,754	11,436	12,632	12,010	11,489	
	Rate per 100,000 per annum.	333.9	255.3	212.9	182.7	160.7	141.1	

† City Boundaries extended in 1895, 1902, 1905.  
‡ „ „ „ 1913, 1928.

\* Records not available.

	1919.		1920.		1921.		1922.		1923.		1924.		1925.		1926.		1927.		1928.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Rheumatic Fever .....	28	31	22	26	22	17	19	29	20	21	22	27	22	28	19	19	28	45	30	55	232	298
Pericarditis.....	8	8	4	4	4	4	8	2	7	2	10	5	5	4	4	5	7	3	6	3	63	40
Acute Endocarditis.....	39	25	28	33	50	36	55	74	49	49	39	55	38	44	23	42	29	43	24	31	374	432
TOTALS .....	75	64	54	63	76	57	82	105	76	72	71	87	65	76	46	66	64	91	60	89	669	770
	139		117		133		187		148		158		141		112		155		149		1,439	

Monthly Distribution of Rheumatic Fever Deaths.	1928.	
	M.	F.
January ...	...	...
February ...	...	...
March ...	...	...
April ...	...	...
May ...	...	...
June ...	...	...
July ...	...	...
August ...	...	...
September ...	...	...
October ...	...	...
November ...	...	...
December ...	...	...
	30	55

DIABETES.

The following table shows the incidence of fatal cases of Diabetes in Liverpool since 1890:—

	Actual Numbers.			Average.			Rate per 100,000	Ratio Males Female
	Males.	Females.	Total.	Males.	Females.	Total.		
1890-1894	55	45	100	11·0	9·0	20·0	3·8	1·222
1895-1899	99	76	175	19·8	15·2	35·0	5·3	1·30
1900-1904	132	100	232	26·4	20·0	46·4	6·5	1·32
1905-1909	153	124	277	30·6	24·8	55·4	8·4	1·23
1910-1914	162	153	315	32·4	30·6	63·0	8·4	1·06
1915-1919	153	137	290	30·6	27·4	58·0	7·4	1·12
1920-1925	184	242	426	36·8	48·4	85·2	8·6	0·75
1926	44	46	90	44·0	46·0	90·0	10·5	0·95
1927	34	53	87	34·0	53·0	87·0	10·2	0·64
1928	31	44	75	31·0	44·0	75·0	8·7	0·70

The death-rate from diabetes rose steadily up till 1910-14. It is probable that this rise was largely due to improved diagnosis. During the war the number of deaths showed a distinct fall, especially in 1917 and 1918; this was a real fall and not merely due to the absence of males on military service as, on the average of five years, females were equally affected with males. Since the war the figures have again risen, and are now distinctly above the average for the decade 1910-19. The disparity, in the incidence, between the two sexes, previously in favour of the females, has since 1904 tended to change. In 1890-1894, 55 per cent. of the deaths were of males; but since 1920-25 the position has been reversed, and in 1928 only 41 per cent. were of males. It is not improbable that the greater attention that has recently been paid to this disease has led to its more frequent recognition as a factor in mortality.

## DEATHS FROM CANCER.

During 1928 there were 1,100 deaths attributed to cancer, equivalent to a rate of 1·27 per thousand. In 1871-1880 the rate of mortality was 0·4 per thousand; an increase of 217 per cent. has therefore occurred. The tables on pages 10 and 11 give the figures for the intervening years. Comparing the anatomical distribution in 1923 and 1928 it will be observed that there is a tendency for deaths from cancer of the breast and also cancer of the intestines, etc., to increase, whilst cancer of the mouth (buccal cavity) shows a lesser rise. A considerable increase has also occurred under the heading "Other or unspecified organs," but there is a decrease in the deaths from cancer of the female genital organs.

Since 1895 the increase in the number of deaths of males is 151 per cent. and of females 91 per cent., or an actual increase of 336 male and 262 female deaths per annum; the increase of population during this period was 227,709, or 34 per cent.

The accompanying graph is very instructive; it shows for the past 50 years the incidence of cancer at each of six age periods. Whilst there has been an increase in recorded cancer mortality at each age period except the earliest, it will be noted that the increase is most marked at the three later age periods, that is at ages over 60 years. The increase in recorded cancer mortality is mainly at old age.

The increased mortality from cancer was, therefore, (*a*) mainly among males; (*b*) most marked in the later years of life. There is evidence from other sources to show that the increase is especially in the case of cancer of the stomach and other internal organs where the disease is most difficult to diagnose. A great part of the increase is probably not real but statistical, and due to improved diagnosis. The term, old age, for example, is less frequently used as a cause of death than in former years.

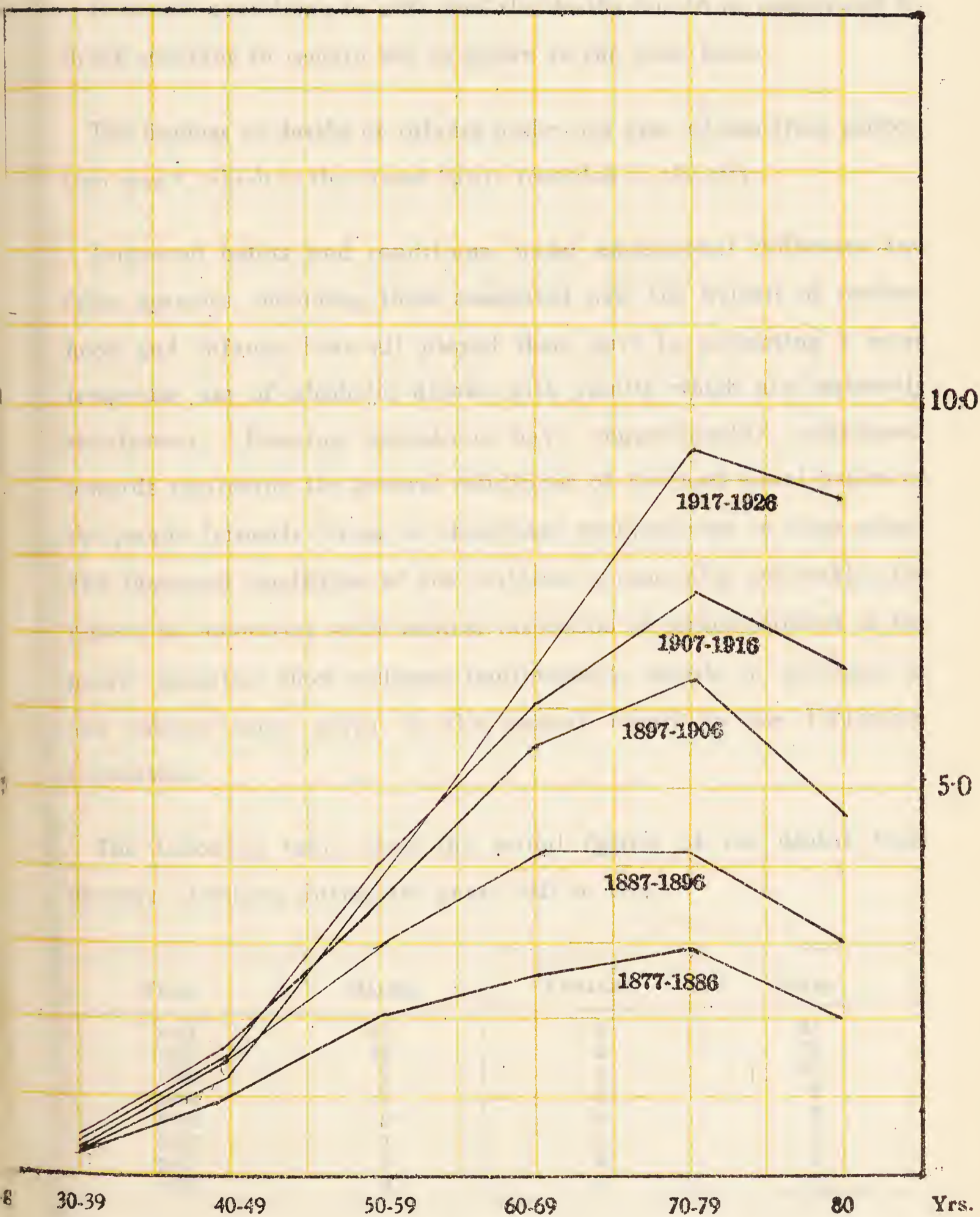
# CANCER.

DEATHS FROM CANCER, AND THE PART OF THE BODY AFFECTED, DURING THE YEARS 1923 TO 1928.

Part of the Body affected.	1923.			1924.			1925.			1926.			1927.			1928.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Buccal Cavity .....	89	7	96	81	8	89	73	14	87	80	9	89	76	7	83	102	10	112
Stomach, Liver, etc .....	114	137	251	127	95	222	118	130	248	140	125	265	137	113	250	192	127	319
Intestines, etc. ....	94	66	160	75	84	159	108	87	195	97	101	198	107	106	213	98	106	204
Breast .....	—	70	70	—	83	83	1	91	92	1	86	87	3	81	84	—	115	115
Female Genital Organs ...	—	116	116	—	120	120	—	91	91	—	100	100	—	110	110	1	84	85
Skin.....	11	5	16	11	8	19	7	3	10	10	6	16	4	7	11	8	4	12
Other or Unspecified Organs	123	89	212	165	84	249	190	85	275	166	72	238	156	70	226	150	103	253
Totals.. .....	431	490	921	459	482	941	497	501	998	494	499	993	483	494	977	551	549	1100

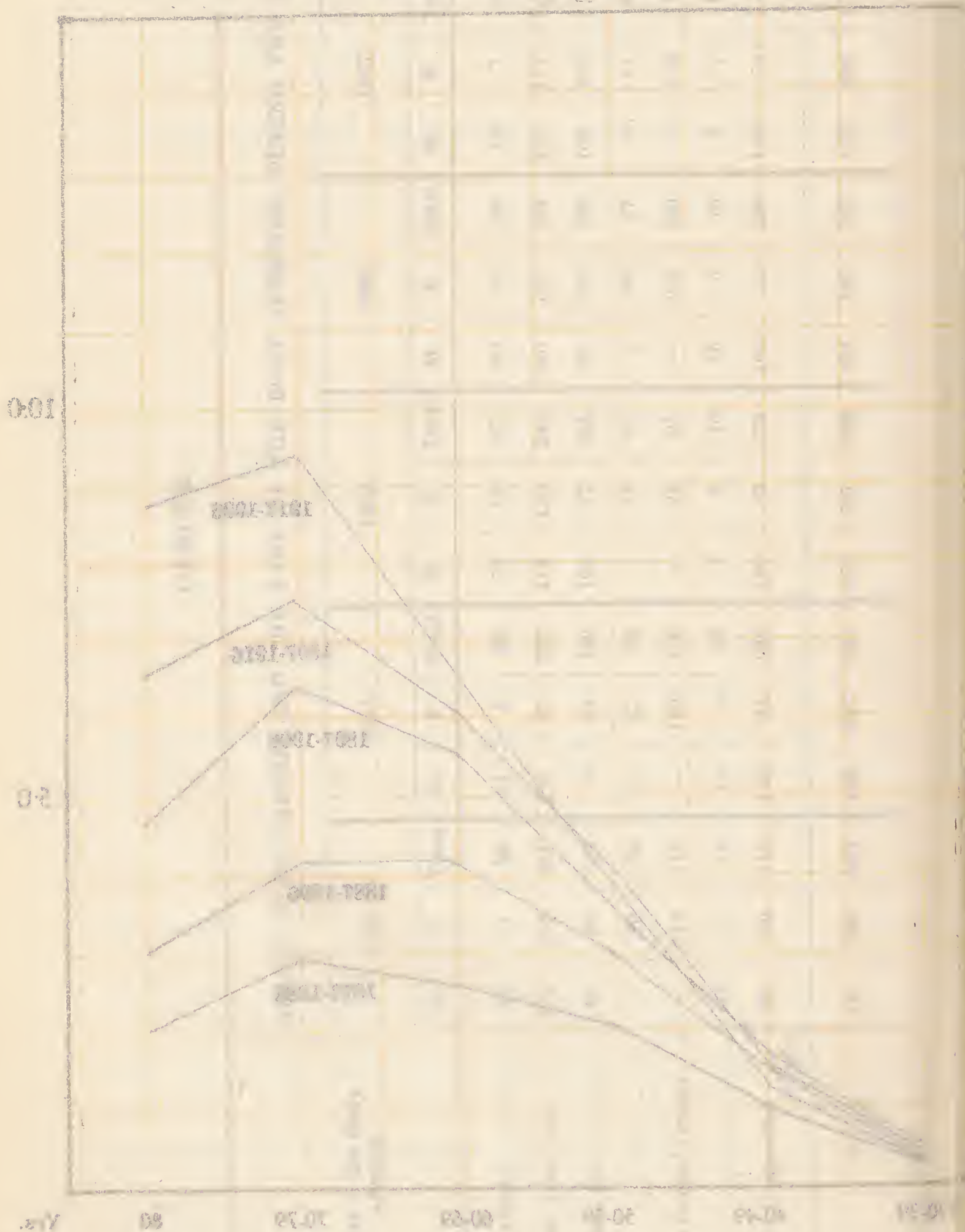
# CITY OF LIVERPOOL.

MORTALITY PER 1000 LIVING AT EACH AGE IN FIVE SUCCESSIVE DECENNIA,  
1877-1926, FROM CANCER.



# CITY OF LIVERPOOL

1877-1926, FROM CANCER  
MORTALITY PER 1000 LIVING AT EACH AGE IN FIVE SUCCESSIVE DECADES



## DEATHS FROM EXCESSIVE DRINKING, &c.

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It is still gratifying to note that the deaths due to or accelerated by drink continue to remain low as shown in the table below.

The number of deaths of infants under one year of age from suffocation was 6, which is the lowest figure recorded in the city.

Improved habits and conditions, wider educational influences and other agencies, including those associated with the welfare of motherhood and infancy have all played their part in promoting a more temperate use of alcoholic drinks with results which are eminently satisfactory. Housing operations have unquestionably contributed towards improving the general conditions of life and social habits of the people formerly living in insanitary surroundings in slum areas. The improved conditions of the children is especially noticeable; the reports in connection with medical inspection of school children in the poorer localities show welcome improvement, details in reference to this subject being given in the annual report to the Education Committee.

The following table gives the actual figures of the deaths from excessive drinking during the years 1921 to 1928.

YEAR.	MALES.	FEMALES.	TOTAL.
1921	21	3	24
1922	10	2	12
1923	9	4	13
1924	7	2	9
1925	2	4	6
1926	1	4	5
1927	5	4	9
1928	2	2	4

### DEATHS FROM GAS POISONING.

Deaths from this cause fall under two headings, namely, from accidental poisoning and suicide, and the following table gives the numbers for the last five years, viz. :—

Year.	Accidentally Killed.	Suicide.
1924	5	13
1925	6	22
1926	5	25
1927	6	20
1928	8	29

### **BLIND PERSONS ACT, 1920.**

A Special Sub-Committee of the Health Committee, with the addition of eight co-opted members, are responsible for the administration of the Scheme approved by the Council under the Blind Persons Act of 1920. The Scheme has been approved by the Ministry of Health.

During the year the sum of approximately £12,370 was paid to the Liverpool Workshops for the Blind and the Home Teaching Society, the National Library for the Blind, and the Liverpool Catholic Blind Asylum.

These amounts are used by these bodies for the welfare of blind persons in the city in accordance with the requirements of the approved scheme, the amount paid to the National Library for the Blind being calculated on the estimated number of blind persons receiving the benefits of the Library during the year.

The following tables are extracted from the Annual Return to the Ministry of Health relating to the numbers of persons registered as blind at the end of the year 1928-29.

The tables relate to the ages of blind persons resident in Liverpool, the number employed, and the number physically or mentally defective. With regard to the children of school age, 41 are reported to be attending school, and 5 are not at school. The latter are all physically or mentally defective.

TABLE I.

TABLE II.

Ages of Persons Registered as Blind.				Persons aged 16 years and upwards, Employed or Otherwise.			
Age.	Males.	Females.	Total.		Males.	Females.	Total.
0-5 years	...	...	...	Employed	...	...	...
5-16 "	...	...	...	Trained but Unemployed	...	...	...
16-21 "	...	...	...	Under Training	...	...	...
21-30 "	...	...	...	No Training but Trainable	...	...	...
30-40 "	...	...	...	Unemployable	...	...	...
40-50 "	...	...	...				
50-60 "	...	...	...				
60-70 "	...	...	...				
70 years upwards	...	...	...				
	724	626	1,350		694	607	1,301

Blind Persons, Physically or Mentally Defective.	
Mentally Defective	...
Physically Defective	...
Deaf	...
Combinations of above Disabilities	...
	90

TABLE III.

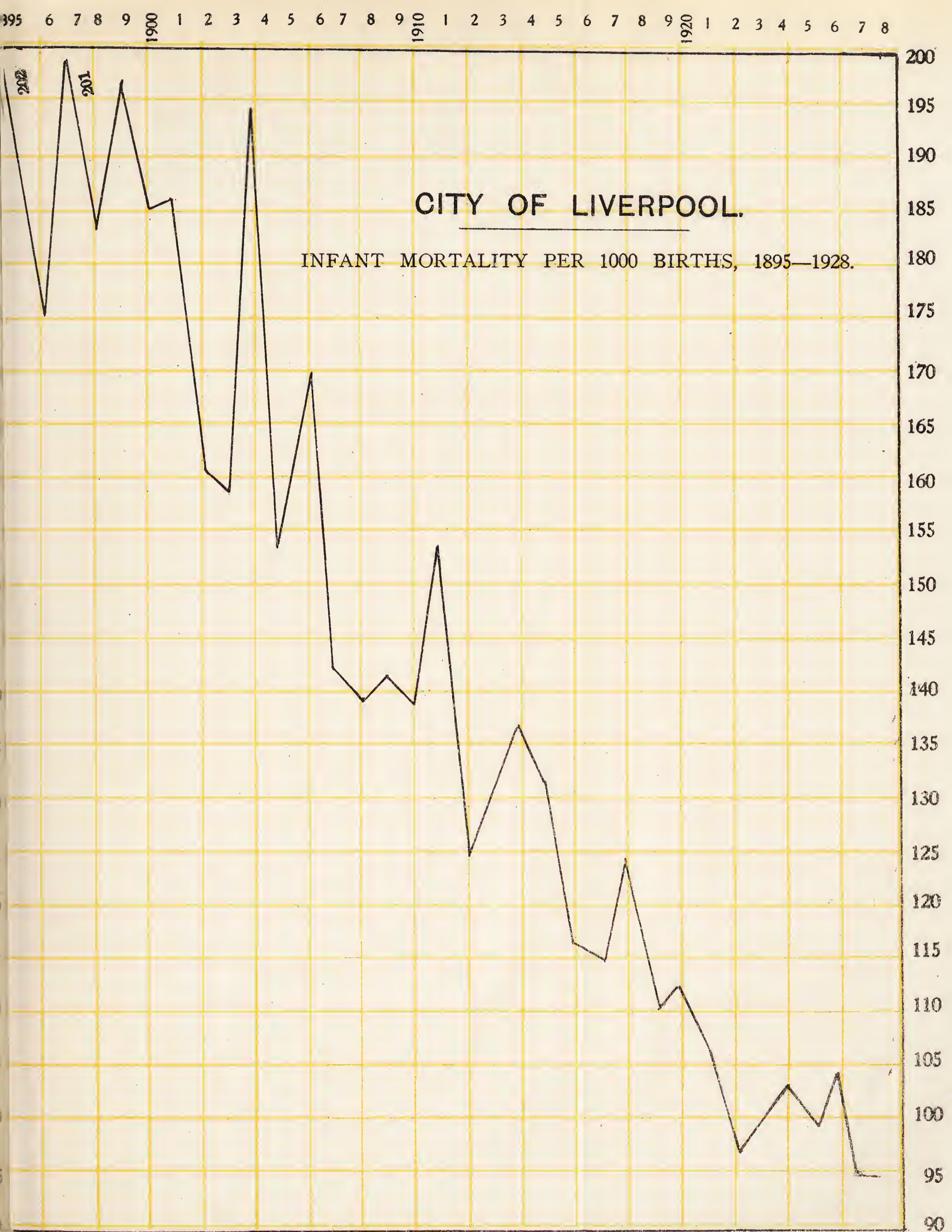
## MATERNITY and CHILD WELFARE.

### INFANT MORTALITY.

The infant mortality rate for 1928 is 94 per 1,000 births, being the lowest on record. A glance at the chart facing page 76 will show how the rate, in spite of fluctuations in individual years, has steadily declined during the past twenty-five years. At the beginning of this period the figure was nearly 200 deaths per 1,000 births.

It is very gratifying to record this decline, and moreover, it may be noted that the numbers of deaths from all the usual forms of infantile disease, such as broncho-pneumonia, convulsions, prematurity, etc., have been reduced, but the most markedly affected cause is the one which, in former years, frequently proved the most fatal, namely, epidemic diarrhoea. The number of deaths under one year of age from this cause in the year 1928 was 282, as against an average of 1,000, or 1,100 twenty-five years ago. No doubt this result is due to a variety of causes, but one which has most materially hastened the decline is the initiation and carrying-on by the Health Committee of schemes for the promotion of the welfare of motherhood and infancy, including the work of the health visitors, the day nurseries, pre-maternity and infant clinics and milk depôts. It is unfortunate that a corresponding reduction cannot be recorded in the case of the mothers. No doubt the problems surrounding maternity are more difficult to solve than those relating to the lives of infants, but closer attention is being paid to the dangers to which the mothers are subject and which at the present time are not far removed from those of twenty-five years ago. A highly important step, however, has been made in providing maternity homes, and ante-natal and post-natal clinics, as it has been demonstrated that a large proportion of the accidents which occur during pregnancy and child-birth can be successfully forestalled and prevented if the patient is under medical supervision previous to her confinement.

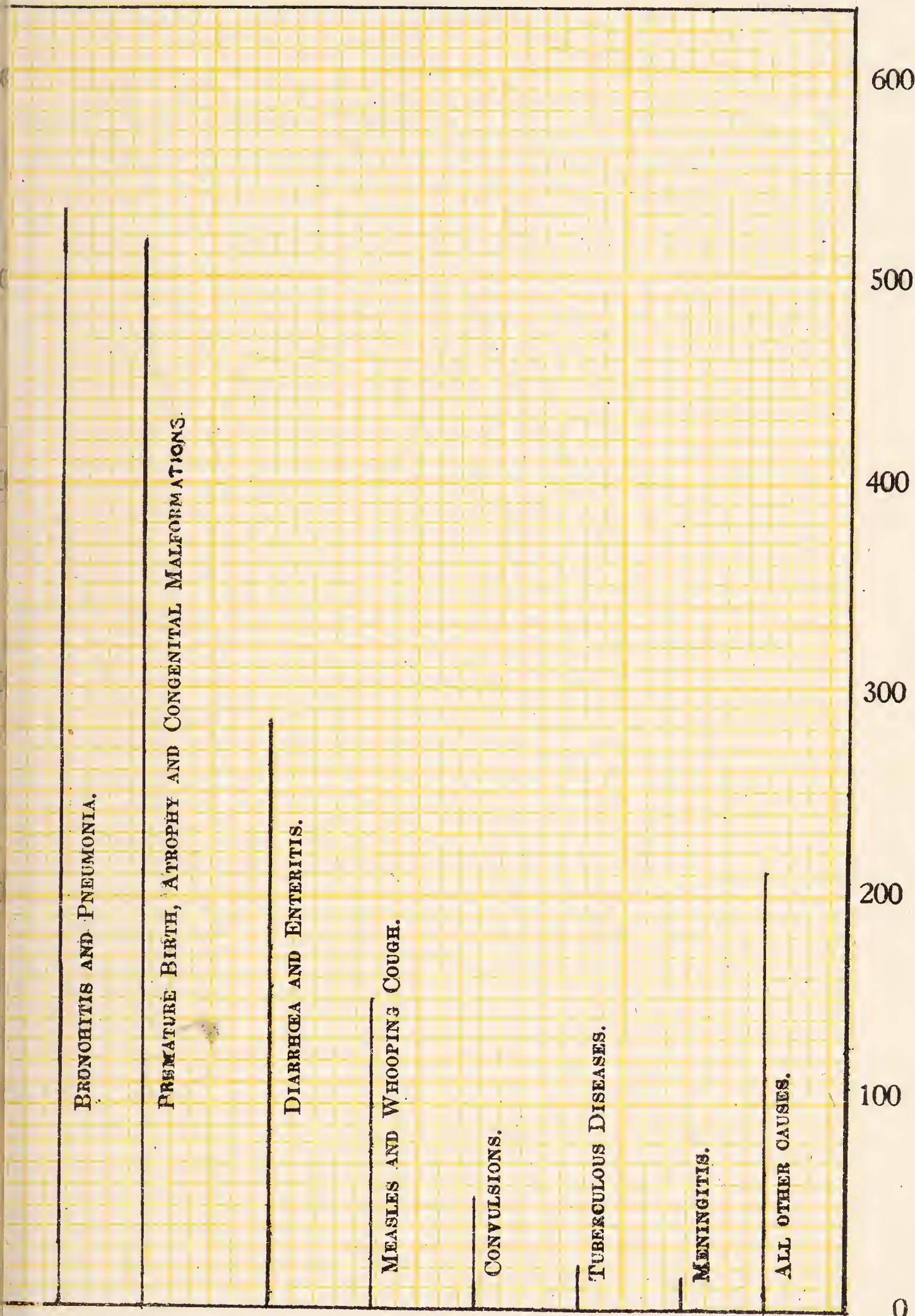
A new form of enquiry has been issued by the Ministry of Health—Maternal Mortality Committee—on which information with regard to every maternal death is collected from the doctors, midwives, health visitors and hospitals, and forwarded to the Ministry of Health.



RECEIVED 1000 BIR

# CITY OF LIVERPOOL.

CHART SHOWING THE PRINCIPAL CAUSES OF DEATHS OF INFANTS,  
UNDER ONE YEAR OF AGE, DURING 1928.



# CITY OF LIVERPOOL

TABLE SHOWING THE PRINCIPAL CAUSES OF DEATHS OF INFANTS  
DURING THE YEAR OF 1923



The following table shows the number of deaths of infants below one year of age and the rate per 1,000 births during the last thirty years :—

Year.	No. of Deaths below One Year of Age.	Rate per 1,000 Births.	Average for 10 years
1899	4,481	199	170
1900	4,247	186	
1901	4,138	187	
1902	3,936	162	
1903	3,815	159	
1904	4,780	196	
1905	3,752	154	
1906	4,137	171	
1907	3,383	143	
1908	3,355	140	
1909	3,377	143	132
1910	3,216	139	
1911	3,466	154	
1912	2,778	125	
1913	2,987	132	
1914	3,219	139	
1915	2,866	133	
1916	2,421	117	
1917	2,071	115	
1918	2,137	124	
1919	2,055	110	102
1920	2,826	113	
1921	2,339	107	
1922	2,052	96	
1923	2,058	99	
1924	2,113	103	
1925	1,935	99	
1926	2,066	104	
1927	1,781	94	
1928	1,789	94	

The relation which the deaths of infants under one year of age has borne to every thousand births in the various districts of the City during the year 1928 is shown in the following table. The detailed causes of death are set out in Table 4 (appendix).

DISTRICTS.	Number of Births. 1928.	Number of Deaths under 1 year of age. 1928.	Deaths under 1 year per 1000 Births. 1928
Exchange .....	2,597	367	141
Abercromby .....	957	108	113
Everton .....	2,977	271	91
Kirkdale .....	1,523	163	107
Edge Hill .....	1,881	164	87
Toxteth .....	2,586	208	81
Walton .....	1,482	121	81
West Derby .....	1,873	148	79
Wavertree .....	1,644	117	71
Toxteth—(East) .....	424	19	45
Fazakerley .....	1,043	89	85
Woolton .....	133	14	106
City .....	19,120	1,789	94

The table on page 80 provides an analysis of the principal causes of infantile mortality for successive periods of five years from 1896-1900 onwards. It is divided into three sections, the first giving the *actual number* of births and of deaths under 1 year of age, both the total deaths and the numbers of deaths from seven main categories of disease, which include almost all the deaths; the second section gives the birth rate and the deaths expressed as rates per 1,000 births, and the third section gives these rates as a percentage of the rates recorded in 1896-1900, such percentages being termed index figures.

Examination of this table shows that whilst the annual number of births has remained approximately stationary, fluctuating from 22,340 to 19,120 per annum, the number of infantile deaths has fallen from 4,232 to 1,789, and the infantile death rate has accordingly fallen from 189 to 94 per 1,000 births; in other words, this rate has fallen to 49·7 per cent. of the figure recorded in 1896-1900. This great saving of life during the past 30 years coincides with the many improvements in housing and sanitation in Liverpool; and more particularly this fall has occurred simultaneously with the increasing attention which has been directed to infant welfare by the Health Department and other bodies, by the improvement in the provision of assistance for women in child birth and the advice and help extended to mothers and infants by health visitors, ante-natal, post-natal and infant clinics, hospitals and other agencies.

Investigation of the actual causes of death bears this out. The greatest reduction has occurred under the heading Nervous Disease (reduction from 100 to 18·5), Tubercular Diseases (to 17·7), and Digestive Diseases (to 29·8). The deaths included under the heading Nervous Diseases are mainly those certified as from convulsions, which is frequently a symptom of the onset of acute infective diarrhœa, by far the commonest cause of death in the group of digestive diseases. Convulsions may also occur at the onset of other infectious diseases, and further may result from injuries during birth. The heading Tubercular Diseases also formerly included many deaths ascribed to *Tabes Mesenterica*, a term of uncertain meaning, but probably including numerous cases of chronic diarrhœa. The reduction in these three groups of diseases—1,585 fewer deaths in 1928—is then mainly a reduction in deaths from diarrhœa.

Equally marked and even more satisfactory is the reduction in the number of deaths from "external causes," which includes overlaying (see page 73) and burns and scalds. The great reduction in the deaths placed in this category testifies to the greater care taken of children and infants by parents. Much less satisfactory are the figures relating to general diseases and respiratory diseases. The figures in column 8 relating to Malformations, Premature Birth, Marasmus, etc., although they show a considerable saving of life—over 550 lives saved per annum—and though doubtless containing many deaths of children who were so malformed as to be incapable of prolonged life, yet show much room for improvement.

ANALYSIS OF CAUSES OF INFANT MORTALITY IN SUCCESSIVE QUINQUENNIA 1896-1925,  
AND THE YEAR 1928. (A).—RECORDED DEATHS.

Years.	1 Births and Birth Rates.	2 Total Deaths Under 1 Year of Age.	3 General Diseases (excluding Tubercu- losis).	4 Tubercular Diseases.	5 Nervous Diseases	6 Respira- tory Diseases	7 Digestive Diseases ; including Diarrhœa.	8 Malforma- tions, Premature Birth, Maras- mus, &c.	9 Exter- nal Cause
1896/1900	111,700	21,160	1,508	698	2,476	3,575	6,376	5,698	819
1901/1905	118,801	20,353	1,546	644	2,516	3,484	5,187	5,732	568
1906/1910	118,313	17,739	1,613	465	2,052	3,146	3,902	5,520	535
1911/1915	111,872	15,458	1,309	345	1,432	2,916	3,635	4,953	429
1916/1920	99,451	11,510	1,116	202	1,083	2,821	1,872	4,107	179
1921/1925	104,217	10,497	1,066	200	573	2,776	1,786	3,764	129
1927	19,020	1,781	202	24	79	495	313	612	2
1928	19,120	1,789	200	21	79	548	325	584	1

(B).—DEATHS EXPRESSED AT A RATE PER 1,000 BIRTHS.

1896/1900	33·4	189	12·7	6·2	22·1	32·0	57·1	51·0	7·1
1901/1905	33·4	172	13·0	5·5	21·2	29·3	43·7	48·1	4·1
1906/1910	32·2	149	13·6	3·9	17·4	26·6	33·0	46·7	4·1
1911/1915	29·3	137	11·6	3·1	12·8	26·1	32·5	43·1	3·1
1916/1920	24·9	116	11·1	2·0	10·9	28·4	18·8	42·0	1·1
1921/1925	25·1	100	10·2	1·9	5·5	26·6	17·1	36·1	1·1
1927	22·2	94	10·6	1·3	4·2	26·0	16·4	32·0	1·1
1928	22·1	94	10·5	1·1	4·1	28·7	17·0	30·5	0·1

(C).—DEATHS EXPRESSED AS A PERCENTAGE OF THE RATES RECORDED IN 1896-19

1896/1900	100	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0
1901/1905	100	91·0	102·3	89·3	95·9	91·5	76·5	94·0	61·0
1906/1910	93	78·6	107·1	62·9	78·6	83·1	57·8	91	61·0
1911/1915	87	72·5	91·9	50·0	57·9	81·5	56·9	84	51·0
1916/1920	76	61·4	87·4	32·2	49·3	88·7	32·7	82	21·0
1921/1925	75·1	54·9	80·3	30·6	24·9	84·7	29·9	70·8	11·0
1927	66·4	49·7	82·7	21·0	19·0	81·2	28·7	62·7	11·0
1928	66·2	49·7	82·6	17·7	18·5	89·7	29·8	59·8	11·0

## SUPERVISION OF PREGNANCY, MATERNITY AND INFANCY.

The activities organised by the Health Committee of this city for the welfare of mothers, infants and young children have been carried on throughout the year 1928 with gratifying results.

Experience has shown that conditions productive of a high mortality rate among mothers and children, point also to a high rate of morbidity, which is, unfortunately, not calculable by available statistics. In order, therefore, to reduce infant and maternal mortality and morbidity, it is necessary to have suitable arrangements for the care and supervision of expectant motherhood and infancy.

For practical purposes, it has been found that the most opportune time at which to apply safeguarding methods is as early as possible in pregnancy so that expectant mothers may have every chance of bringing healthy infants to maturity.

In the City of Liverpool 28 pre-maternity clinics are held weekly, whose sole care is the welfare of the expectant mother. Of these 14 are under the auspices of the Maternity Hospital, two are held at the Royal Infirmary, two belong to the Child Welfare Association, and the remaining nine are administered by the Health Committee.

At a pre-maternity clinic, specialised examination is provided and advice and instruction are given to the mothers. Treatment, except of a minor or preventive character, is not provided. Patients requiring treatment are referred to private doctors or hospitals. It will be seen, therefore, that it is necessary for the fulfilment of a complete welfare scheme to have co-ordination between the clinics, private doctors, hospitals, maternity and rest homes, midwives, guardians of the poor, and all those agencies which render valuable assistance to the medical and social needs of necessitous persons.

The Central Midwives Board have laid down in their rules that midwives must keep notes of the ante-natal condition of their cases in the form approved by the Board. Expert medical opinion and advice, obtainable free, at pre-maternity clinics, are most helpful to midwives in this ante-natal supervision of their patients.

Expectant mothers come to the clinics from many sources, as will be seen by a glance at the accompanying table, which refers to the nine Corporation clinics only.

Brought or sent by midwife	...	...	...	...	1,175
Return cases	...	...	...	...	508
Sent by friends	...	...	...	...	464
Own accord	...	...	...	...	356
Sent by health visitor	...	...	...	...	75
Sent by doctors	...	...	...	...	53
Sent by hospital or voluntary association	...	...	...	...	26
Total new cases					2,657

The total attendances at the clinics were ... 10,766

The great majority of the cases are patients of midwives, a few are private doctors' cases who cannot afford to pay frequent routine visits to the doctor during pregnancy, and a few are women who intend to go to a hospital for confinement where out-door ante-natal supervision is not provided.

It will be noted that the numbers of cases referred by doctors and midwives are very gratifying and an indication of the position of pre-maternity clinics as a co-ordinating factor in the midwifery services of this city.

Of the new patients 794 were primigravidae and 1,781 were multiparae, and 82 were not pregnant.

The arrangements for confinement for the year were :—

Midwife	...	...	...	...	...	2,014
Institution	...	...	...	...	...	424
Private doctor	...	...	...	...	...	24

In 113 cases arrangements had not been made.

Of the births of pre-maternity clinic patients 75·8 are attended in their own homes by midwives.

Classes for mothers are held at the pre-maternity clinics in rotation. At these classes the mothers are advised on preparation for their confinements, hygienic maternity clothes for themselves, and suitable cot, bedding and clothing for the coming infant. The attendances at the classes have shown how much they are appreciated.

Mothers who stay at home for their confinements and have no women relations or friends to assist them in their housekeeping are very grateful for the provision of a home help. Home helps are women who can take the place of the housewife in the home, and cook, clean and attend to the children. They are provided by the Women's Service Bureau, Gambier Terrace. The latter organisation also provides maternity bags and sterilised accouchement sets, which are a great boon to very poor mothers and to those who unexpectedly bear twins. Midwives are encouraged to visit the homes of their patients and to investigate carefully the arrangements for confinement. Where these conditions are unsatisfactory, every effort is made to rectify them at once.

In post-natal work arrangements are made firstly for examination of the mother about four to five weeks after her confinement to ascertain if she has made normal recovery, and secondly, for the general supervision of nursing mothers, and infants up to the age of five years, by the provision of infant consultation centres or clinics (e.g., the Carnegie Model Welfare Centre), day and resident nurseries, infant welfare centres (milk depôts), and by skilled medical examination and advice by doctors and health visitors in the clinics and homes of the people.

Infant clinics are established primarily for the instruction of the mothers in the care and feeding of infants and young children. Their purpose is to prevent unnecessary illness due to ignorance of mothers, to assist in restoring the mother to health and in establishing natural feeding; to instruct in all branches of hygiene pertaining to mother, child and home, and to sort and refer those cases which require help or treatment to the right quarter. These clinics do not in any sense take the place of a hospital, dispensary or private doctor's consulting room.

Pre-maternity and infant clinics provide, where necessary, accessory foods, such as cod liver oil, pure or in emulsion, Virol, etc., simple tonics, and aperients at cost price. In the case of infants whose

mothers are unable to suckle them, Grade A (T.T.) milk, modified to prescription, or dried milk is provided at cost or reduced price. The latter may be obtained at the clinics, both may be obtained on a note from the doctor at one of the several infant welfare centres (milk depots) throughout the city, such note being re-signed by the doctor every four or six weeks.

The supply of milk in necessitous cases to either mother or child is invariably made the subject of careful enquiry as to the means of the recipient and her ability to pay. The return made to the Maternity and Child Welfare Sub-Committee fortnightly shews the extent to which recipients are in a position to pay for the milk, ordered on medical grounds, and supplied only on medical certificate.

Domestic science classes are held at each clinic in rotation; cookery, knitting, mending, reconstructing, cutting out and making of garments, first aid and home nursing being taught. These classes are well attended and much appreciated.

The sources of admission to the post-natal clinic are similar to those of the pre-maternity clinic, but mothers having once attended an "infant clinic" frequently attend as a matter of course with each succeeding child, so that the number of mothers coming under this category shews a marked increase each year.

The value of the mother's attendance at a clinic is increased by visits to her home which are paid by the health visitor, who has either registered, weighed or taken notes of the doctor's advice for her baby at the clinic.

Every child who has been seen by the doctor at a clinic is visited the following day in order to ascertain if the doctor's instructions were understood and are being carried out properly.

#### CARNEGIE WELFARE CENTRE.

The Carnegie Welfare Centre Clinics, which were opened in January, 1924, are much appreciated, and a large number of women and children attend at each session.

The Carnegie Centre serves a threefold purpose. Firstly, for the provision of clinics for expectant mothers and their infants. Secondly, for the provision of wards for the observation of children suffering from

the dyspepsias of infancy, early rickets and wasting, and also for the establishment of a suitable dietary for those children, who, for some reason or other must be separated from the mother and weaned. Thirdly, as an educational centre for those studying preventive medicine or public health administration. The centre is visited frequently by medical students, social science students, health visitor students, midwives and foreign delegates.

The policy of administration in the wards is to admit infants who are between the type of case which may be safely left at home and seen as an out-patient and the type of case which is more suitably treated in a hospital ward.

A small laboratory adjoins the wards.

During 1928 the numbers admitted to the wards were :—106 children.

The sources of admission were :—

Infant welfare centres	...	...	...	...	...	49
Health visitors on districts	...	...	...	...	...	13
Hospitals	...	...	...	...	...	17
Corporation nurseries	...	...	...	...	...	6
Private doctors	...	...	...	...	...	7
Voluntary associations	...	...	...	...	...	2
Parents	...	...	...	...	...	8
Midwives	...	...	...	...	...	4

Many more applications for admission were received but had to be refused, either because there were no vacancies at the time or because the applicants were unsuitable cases.

The reasons for admission were :—

Lack of normal progress	...	...	...	...	...	19
Infantile dyspepsia	...	...	...	...	...	46
Early rickets...	...	...	...	...	...	20
Observation for various reasons (e.g., breast feeding, weaning, marasmus, etc.)	...	...	...	...	...	18
Prematurity (one weighing 2 lbs. 8 ozs. on admission, aged 3 weeks)	...	...	...	...	...	3

The majority of children were kept in residence until a complete recovery was made, whilst others, when necessary, were recommended hospital or home treatment, and the parents advised accordingly. In two cases it was necessary to have the children transferred to hospital, in other cases, home care with outside medical attention was adopted. The home conditions, such as unsuitable surroundings, overcrowding, poverty, the type of mother and her pre-natal conditions were carefully considered in each case. During the year 76 cases were sent home having established good progress, seven made fair progress, two went home under the care of their own doctor, two were transferred to hospital, and five died (premature twins).

One pre-maternity clinic is held each week and the attendances were as follows :—

	1925.	1926.	1927.	1928.
New cases ... ..	259	301	336	364
Total attendances...	1,117	1,249	1,150	1,382

Four infant clinics are held weekly, and the following figures indicate the number of new cases registered and the total attendances for each of the four years they have been in existence :—

	1925.	1926.	1927.	1928.
New cases ... ..	1,094	1,092	990	1,078
Total attendances .	16,160	17,005	15,542	15,618

During the year the sewing, cookery, knitting, first aid and home nursing classes held for the mothers at these Centres were well attended.

#### ULTRA-VIOLET THERAPY.

One Jesioneck mercury vapour lamp (voltage 230) was installed in May, 1928, and sessions have been held three times weekly since then.

Ninety patients have been irradiated, and over 1,800 treatments have been given.

A careful examination of all cases is made before irradiation is commenced and the pulse and temperature of each patient is taken before and after treatment.

Resident children are weighed daily, out-patients (children) are weighed weekly.

The cases treated have included expectant and nursing mothers, rachitic children and those not making satisfactory progress either as the result of definite illness, such as respiratory disorder, specific fever, etc., or, as it happens in some cases, for no apparent reason.

Whenever practicable, children in the latter category (i.e., lack of normal progress without apparent cause) are admitted to the observation wards and at the same time a careful investigation is made into their pre-natal records and home conditions, feeding, etc.

The rachitic children irradiated are those who have no deformity requiring surgical interference, and vary from cases with a typical pre-rachitic syndrome to those showing actual non-surgical evidence of the disease.

In all children improvement has been more marked when in residence in the centre, but it has been noticed that the rate of gain in weight has been less during the last few weeks of the year than during the summer and autumn when, of course, there were more facilities for being in the fresh air, and the incidence of catarrhal conditions was less.

Good results have been obtained uniformly. In some cases, spectacular gains have been recorded with a consistent improvement in general condition and muscle tone. An increased liveliness in lethargic children has been a noticeable feature.

#### Examples :—

A.P.—6½ months. Flabby, pale; weight 11 lbs. 15 ozs., maintained without gain for six weeks. Then ultra-violet irradiations were begun; 10 ozs. were lost after first exposure; thenceforth a steady gain was made, till after 31 irradiations a gain of 5½ lbs. was made in weight and 1½ inches in length; two teeth were cut and the muscles were firm.

D.R.—1 year 11 months. Never breast-fed—chronic ileocolitis, whooping cough 8 months previously—in poor condition. Weight 23 lbs. 8 ozs. Ultra-violet irradiation was begun; loss of 8 ozs. in first week. After four weeks' treatment, gain of 2 lbs. in weight and ½ inch in height. Stools normal—general condition good.

L.J.—3 months. Never breast-fed—always delicate. Weight at commencement of ultra-violet irradiation 5 lbs. 8 ozs. After nine weeks' treatment gain of 2 lbs. 1 oz. in weight and  $1\frac{3}{4}$  inches in height. General condition much improved.

R.R.—3 months. Double hare lip; on breast for 10 days. Weight 7 lbs. Gain of 3 ozs. in 25 days. Ultra-violet irradiation commenced; after two weeks gain of 1 lb. 2 ozs. Returned to hospital fit for operation.

J.L.—4 years. Slight evidence of rickets—night terrors—failure to gain after many weeks' regular attendance at clinic. Gain after three weeks ultra-violet irradiation, 1 lb. 14 ozs. in weight and  $\frac{1}{2}$  inch in height.

All the children attending the "sunlight" clinic are attached to infant clinics, and in this way are being kept under medical supervision during and after their course of treatment.

The expectant mothers have been those suffering from marked debility and depression, due in most cases to overwork, sordid home conditions, or as a direct result of the pregnant state. No woman with an organic lesion of any kind has been irradiated. Without exception these patients have, after a few exposures, expressed their surprise at their improved condition, and all who have continued the treatment regularly until discharged by the clinic doctor have been obviously benefited. Multiparae whose confinements have taken place have stated either that the labour was easier or that they "picked up" after it more quickly. One woman who was irradiated for three weeks prior to the twelfth confinement said that it was her easiest confinement, and that her milk had not only been more abundant than on former occasions, but that lactation was being satisfactorily maintained. Curiously, this patient was one of the two whose hæmoglobin decreased 5 per cent. during the treatment.

The ante-natal patients who have been and are being irradiated will be watched carefully and their infants also kept under observation. Only five nursing mothers have yet been sent for treatment; all have

shown an improved condition generally. Lactation has been established satisfactorily in two cases, the remaining three failing absolutely. Two of these were women in a very debilitated state, the other, a feckless girl who had no desire to nurse her infant.

Every case, ante or post-natal, attends a clinic, and is therefore under medical supervision apart from that of the "sunlight" clinic.

1. Expectant mothers ... Treated 20 + 5 still being treated = 25.
2. Nursing mothers ... Treated 3 + 2 still being treated = 5.

#### CHILDREN.

1. Rachitis ... ... Treated 14 + 7 still being treated = 21.  
In-patients, 14; out-patients, 7.
2. Lack of normal progress. Treated 19 + 16 still being treated = 35.

### TREATMENT OF PRE-SCHOOL CHILDREN,

Attention having been drawn by the Chief Medical Officer to the Ministry of Health to the number of children examined in school for the first time who were found to be suffering from untreated defects of vision, arrangements were made by the Liverpool Health Committee for the use of the services with regard to the treatment of defective vision under the authority of the Education Committee.

During 1928, 132 children under the age of five years were referred for treatment under the Education Committee's scheme as follows:—

Defective vision ... ..	115
Otorrhœa ... ..	12
Found unsuitable for treatment ... ..	5

These children were those who were unable to obtain the necessary treatment from private practitioners on account of poverty, or from hospital out-patient departments on account of the already long waiting lists necessitating loss of time and consequent risk of irremediable defects in the children's vision or hearing.

Further co-ordination between the Health and Education services has been arranged by the employment of Assistant School Medical Officers at the infant clinics.

## MIDWIVES ACTS, 1902 AND 1918.

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The Midwives Act, 1918, as an extension of the principal Act, came into force on 1st January, 1919, and, under it, the Local Supervising Authority (Health Committee) is required to pay the fee of all medical practitioners called in cases of emergency. This section is the confirmation of the step taken by the City Council in 1904, when a resolution was passed authorising the Health Committee to pay the sum of one guinea in cases of emergency assistance. In accordance with the terms of the Act of 1918 the fees payable vary from two guineas downwards according to the circumstances of the case. This has been found to be of the greatest benefit in dealing with cases of difficult midwifery.

During the year 1928 two hundred and nine-two midwives gave the required notice, under section 10, of their intention to practice midwifery in the city.

A total of 11,389 births was attended by these midwives, and 1,479 by the midwives on the district staff of the Maternity Hospital, making altogether 66.1 per cent. of the total number of births registered in the city. So far as can be ascertained there were no births attended during the year by uncertified women. The number of births taking place in poor law institutions has risen since 1923 from 1,055 to 2,233.

STATEMENT OF NOTIFICATIONS OF BIRTHS RECEIVED DURING THE YEARS 1924 TO 1928.

Notifications Received from	1924.		1925.		1926.		1927.		1928.	
	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.
Certified Midwives .....	13,270	64.55	12,624	64.43	12,535	63.33	11,647	61.23	11,389	59.6
Medical Attendants.....	1,920	9.33	1,852	9.45	1,749	8.83	1,690	8.88	1,723	9.0
Poor Law Institutions .....	1,197	5.82	1,463	7.47	1,728	8.73	1,849	9.72	2,233	11.7
Ladies' (Maternity Hospital...	690	3.35	647	3.30	776	3.81	1,075	5.65	1,067	5.6
Charity (District Homes .....	1,501	7.30	1,489	7.60	1,471	7.43	1,453	7.64	1,479	7.7
"Rest Home," Chatham St...	335	1.63	331	1.69	308	1.55	289	1.52	269	1.4
Other Institutions .....	43	0.21	101	0.52	190	0.96	310	1.63	323	1.7
Parents .....	5	0.02	6	0.03	8	0.04	3	0.02	2	0.01
	18,961	92.23	18,513	94.49	18,765	94.81	18,316	96.29	18,485	96.68

Total number of births registered in the City	1923	20,695	1925	19,592	1927	19,020
	1924	20,559	1926	19,792	1928	19,120

### STILL-BIRTHS.

The number of still-births notified during 1928 was 771, of which number 347 were notified by midwives, being at the rate of 1·9 per cent. of the births attended by them.

\*A midwife does not give a certificate of still-birth unless she is present at the time of birth: she is instructed that if the birth should take place before her arrival she must report the matter to the Coroner, who, after enquiry, grants a certificate for the burial of the body.

Enquiries were made into the circumstances of these still-births, and the following are the figures relating to the months of pregnancy during which the still-births took place :—

Sixth month	...	...	...	...	...	4
Seventh month	...	...	...	...	...	54
Eighth month	...	...	...	...	...	65
Ninth month	...	...	...	...	...	224
						347

The number of visits paid with reference to still-births was 670.

Table shewing results of examination of still-births during the last 10 years :—

Year.	Examined.	Positive.	Percentage.
1919	321	24	7
1920	411	43	10
1921	354	19	5
1922	438	30	7
1923	408	33	8
1924	398	26	6
1925	346	15	4
1926	347	13	4
1927	297	12	4
1928	269	2	0·74

Among the midwives cases during the year there were 71 difficult labours where the child was stillborn, which were delivered by medical practitioners called in under the rules of the Central Midwives Board.

\* The Births and Deaths Registration Act, 1926, which came into force on 1st July, 1927, requires the registration of still-births by the Registrar of Births and Deaths.

## MEDICAL ASSISTANCE.

Under the rules issued by the Central Midwives Board, a midwife must advise that medical assistance shall be called in where there is any abnormal circumstance connected with the confinement.

The following table gives the details of the complications for which medical assistance was advised by midwives:—

• **MOTHER :**

Abnormal presentation :

Brow or face presentation	...	...	...	...	12
Occipito-posterior presentation	...	...	...	...	48
Transverse presentation	...	...	...	...	12
Breech presentation	...	...	...	...	66
Foot presentation	...	...	...	...	13
Cord presentation	...	...	...	...	21
Placenta prævia	...	...	...	...	9
Deformed pelvis	..	...	...	...	9
Ante-partum hæmorrhage	...	...	...	...	154
Post-partum hæmorrhage	...	...	...	...	88
Retained placenta or membranes...	...	...	...	...	91
Ruptured perinæum	...	...	...	...	524
Multiple births	...	...	...	...	6
Abortion or premature birth	....	...	...	...	74
Pyrexia	...	...	...	...	137
Eclampsia	...	...	...	...	14
Obstructed labour, uterine inertia, or requiring instrumental assistance	...	...	...	...	580
Influenza	...	...	...	...	3
Various	...	...	...	...	281

**CHILD :**

Injury at birth	...	...	...	...	4
Malformation	...	...	...	...	50
Feebleness and prematurity	...	...	...	...	163
Skin eruption	...	...	...	...	64
Ophthalmia	...	...	...	...	244
Other conditions in child	...	...	...	...	130

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2,797

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The number of visits of enquiry with regard to accounts for emergency assistance during the year was 3,449.

### PUERPERAL FEVER.

The number of cases of puerperal fever notified to the Medical Officer of Health during the year was 51, of which 19 proved fatal. This gives a death rate of 0·99 per 1,000 births in the city.

There were 45 cases admitted to or occurred in hospital, viz.:—  
8 Mill Road Infirmary, 29 Walton Institution, 7 Toxteth Institution,  
1 Royal Infirmary.

After the usual enquiries were made, 29 cases (of which 8 died) were found to have occurred in the practice of midwives. The number of visits paid in this connection was 49.

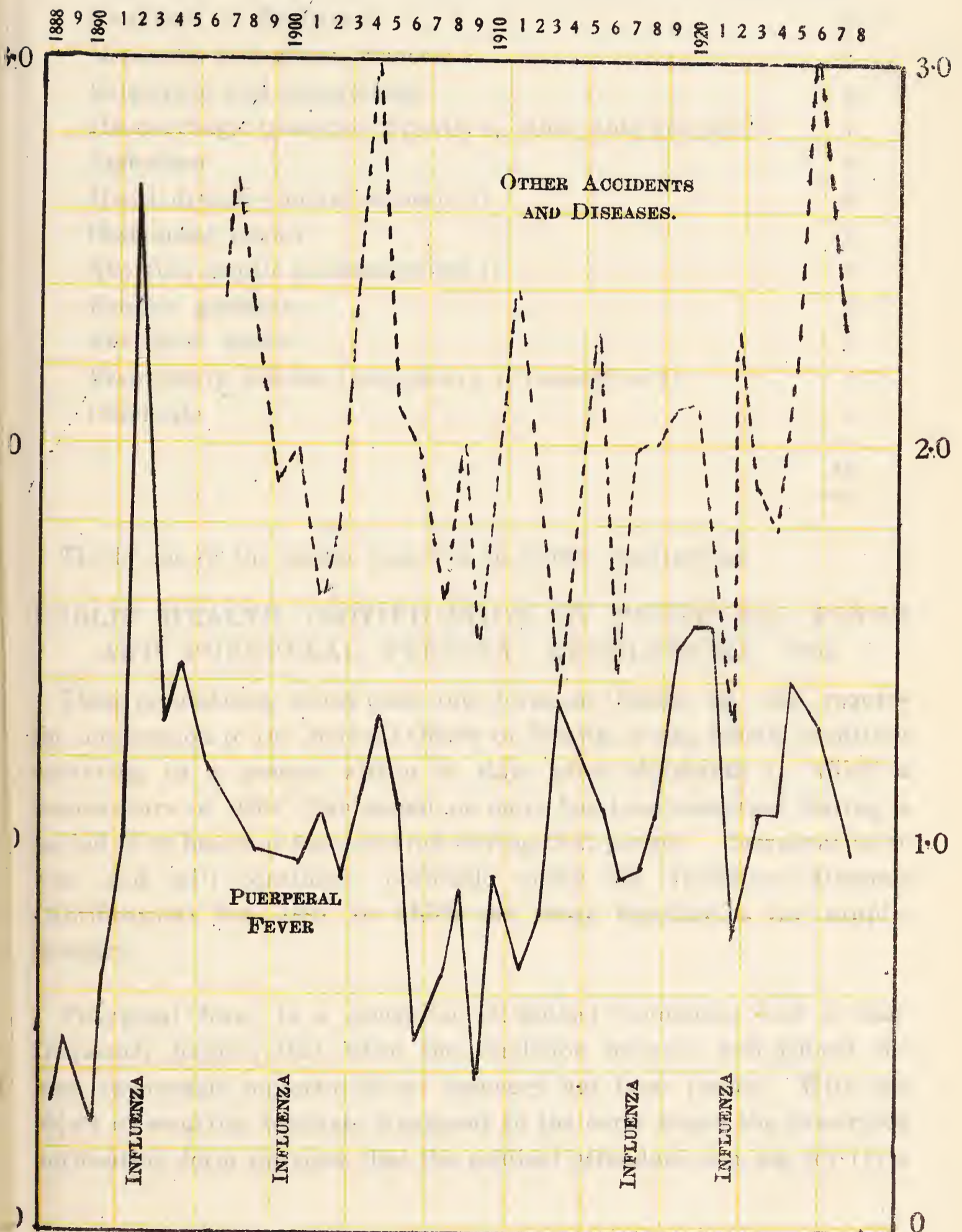
#### DEATHS AND DEATH RATES FROM PUERPERAL FEVER AND OTHER DISEASES AND ACCIDENTS OF PREGNANCY DURING THE YEARS 1909 TO 1928 (20 YEARS).

Year.	Total number of births in the City.	Deaths from Puerperal Fever.	Death rate per 1,000 births.	Deaths from Other Diseases and Accidents of Pregnancy	Death Rate per 1,000 births.
1909	23,591	21	0·89	47	2·0
1910	23,054	9	0·39	35	1·5
1911	22,493	21	0·93	47	2·1
1912	22,233	15	0·68	53	2·4
1913	22,555	18	0·80	42	1·8
1914	23,065	31	1·34	31	1·3
1915	21,586	27	1·25	41	1·9
1916	20,679	22	1·06	48	2·3
1917	17,906	16	0·90	25	1·4
1918	17,133	16	0·93	35	2·0
1919	18,694	20	1·07	38	2·0
1920	25,039	36	1·49	54	2·1
1921	21,904	34	1·55	46	2·1
1922	21,467	33	1·54	28	1·3
1923	20,695	16	0·77	47	2·3
1924	20,559	22	1·07	39	1·9
1925	19,592	21	1·07	36	1·8
1926	19,792	28	1·41	43	2·2
1927	19,020	25	1·31	58	3·0
1928	19,120	19	0·99	45	2·4

As shown in the above table and the accompanying diagram the number of deaths from other accidents and diseases of pregnancy

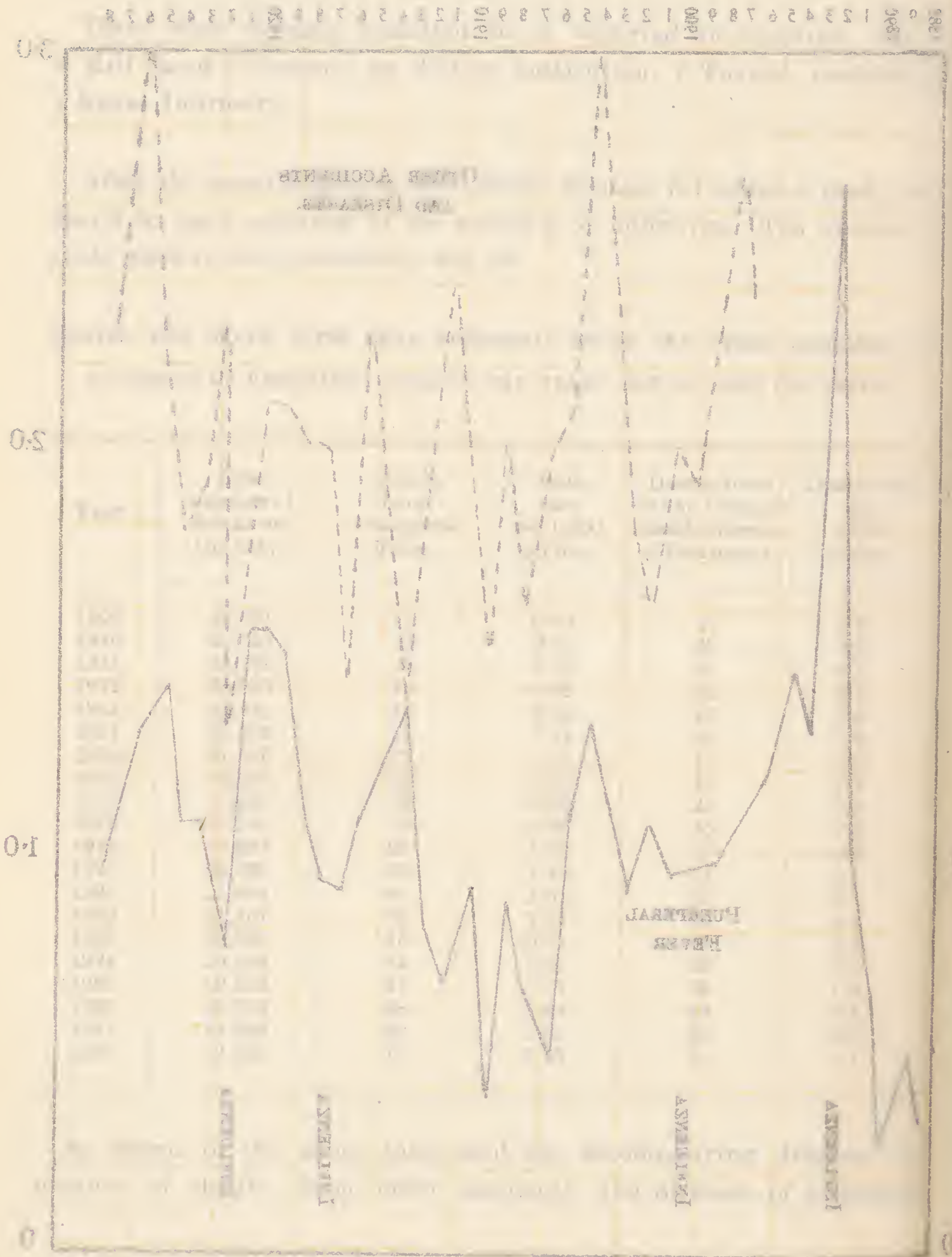
# CITY OF LIVERPOOL.

MORTALITY PER 1000 BIRTHS FROM PUERPERAL FEVER AND  
OTHER ACCIDENTS AND DISEASES OF PREGNANCY, 1888-1928.



# CITY OF LIVERPOOL

MORTALITY PER 1000 BIRTHS FROM PTEREAL FEVER AND  
(OTHER ACCIDENTS AND DISEASES OF PREGNANCY 1880-1923)



continues to be high. The certified causes of the 45 deaths that occurred in 1928 were :—

Hyperemesis	...	...	...	...	...	...	...	1
Convulsions	(ante-partum 2,	post-partum 3,	not					
stated 2)...	...	...	...	...	...	...	...	7
Toxæmia	...	...	...	...	...	...	...	2
Nephritis 1, Pyelitis 1	...	...	...	...	...	...	...	2
Nephritis and mitral stenosis	...	...	...	...	...	...	...	1
Eclampsia and hæmorrhage	...	...	...	...	...	...	...	2
Hæmorrhage (placenta prævia 5, other ante-partum 2)								7
Embolism	...	...	...	...	...	...	...	2
Heart disease (mitral stenosis 2)	...	...	...	...	...	...	...	6
Obstructed labour	...	...	...	...	...	...	...	3
Abortion (septic 3, hæmorrhage 1)...	...	...	...	...	...	...	...	4
Ectopic gestation	...	...	...	...	...	...	...	3
Puerperal mania	...	...	...	...	...	...	...	1
Respiratory disease (pneumonia 1, bronchitis 1)							...	2
Indefinite	...	...	...	...	...	...	...	2
								<hr/> 45 <hr/>

Thirty one of the deaths occurred in public institutions.

#### PUBLIC HEALTH (NOTIFICATION OF PUERPERAL FEVER AND PUERPERAL PYREXIA) REGULATIONS, 1926.

These regulations, which came into force on October 1st, 1926, require the notification to the Medical Officer of Health of any febrile condition occurring in a woman within 21 days after childbirth in which a temperature of 100·4° Fahrenheit or more has been sustained during a period of 24 hours or has recurred during that period. Puerperal fever was, and still continues, notifiable under the Infectious Diseases (Notification) Act, 1889, to which the above regulations are supplementary.

Puerperal fever is a somewhat ill-defined condition, and it may frequently happen that when the condition becomes well-defined the most favourable opportunity of recovery has been passed. With the object of securing adequate treatment in the early stages the prescribed notification form provides that the medical attendant can ask for (1) a

second opinion on the case, (2) certain bacteriological examinations, (3) admission of the patient to hospital, or (4) the provision of trained nurses; or, alternatively, state that facilities for all necessary treatment exist.

The necessary facilities to meet these requisitions have been provided by the Health Committee as follows:—The services of a consultant obstetrician are available when considered necessary by the medical officer. Hospital accommodation has for some years been provided, formerly in the City Hospital, Fazakerley, and latterly in the Walton institution. Arrangements have been made by which the services of the nurses of the Queen Victoria District Nursing Association are available.

The number of cases of puerperal pyrexia notified during the year was 154. Of these 9 were found to be puerperal septicæmia, and therefore fall within the definition of puerperal fever. Three were cases of influenza, one of bronchitis, five of pyelitis. The remaining 136 were cases of pyrexia of puerperal origin of a lesser degree than is termed puerperal fever, and included four who resided outside the city.

Of the above cases 120 were admitted to or occurred in hospitals, and 23 were attended by midwives. In 9 cases a consultant obstetrician was called in, and in 13 cases nurses were provided.

#### ROUTINE VISITS TO MIDWIVES.

Rule 25 laid down by the Central Midwives Board states as follows:—  
 “The Local Supervising Authority shall make arrangements to secure  
 “a proper inspection of the register of cases, bag of appliances, etc.,  
 “of every midwife practising in the district of such authority, and  
 “when thought necessary, an inspection of her place of residence, and  
 “an investigation of her mode of practice.”

For this purpose two fully trained female inspectors have been appointed; both hold the certificate of the Central Midwives Board. During the year, 2,428 visits were paid to the homes of practising midwives for the purpose of inspection, and for special enquiries relating to their work.

The operation of the Notification of Births Act, which renders it obligatory on the part of the medical attendant or midwife, as well as the father of the child, to notify the occurrence of a birth, has been a very valuable aid to the working of the Midwives Act.

## MATERNITY AND REST HOME.

“QUARRY BANK,” 162, HAWTHORNE ROAD.

The accommodation of the home consists of two wards, together with an emergency ward and an isolation ward, containing 15 beds in all. It is intended to provide accommodation for women whose physical condition or home circumstances make it very desirable that they should have rest and care before, during, or after their confinements. It has proved to be of immense benefit in this way, and has been very much appreciated by those who have been received into the home.

The statistics relating to the treatment of patients in the home during the year 1928 are as follows :—

Total number of cases admitted	...	...	...	...	196
Number of women confined in the home	...	...	...	...	162
„ pre-maternity cases	...	...	...	...	32
„ post-natal cases (with infants)	...	...	...	...	2

The average duration of stay was 17·4 days.

Of the 162 cases of labour, conducted in the home, the patients in all cases made a good recovery, and no maternal mortality occurred. The normal cases numbered 129, and the cases of complicated labour were 33. Eight patients were transferred to hospital for caesarean section. Of the total number of cases 118 were primigravidæ. Former patients admitted for a second confinement at the home numbered 27, for a third 4, and a fourth 3.

Of the 162 babies born in the home, 158 were born alive and 4 were still-born. In the case of the still births the cause of death was stated to be: 1 premature, 1 spina bifida, 1 undeveloped infant, and 1 premature twin.

Of the 158 babies born alive 2 died within 10 days of birth. The cause of death was stated to be :—

- |                                     |     |     |     |         |
|-------------------------------------|-----|-----|-----|---------|
| (1) Icterus neonatorum              | ... | ... | ... | 3 days. |
| (2) Congenital stricture of pylorus | ... | ... | 4   | „       |

The 32 pre-maternity cases were admitted on account of various complications associated with pregnancy, such as albuminuria, bacilluria, heart disease, contracted pelvis, and varicose veins.

No case of puerperal sepsis and no case of ophthalmia neonatorum occurred in the home during the year.

A pre-maternity clinic is held at the home once per week, when a medical officer attends to see patients.

During the year 159 patients made a first attendance, and the total number of attendances was 732. The average attendance per week is 14.6.

### OPHTHALMIA NEONATORUM.

#### INFLAMMATION OF THE EYES OF THE NEWLY-BORN.

The definition adopted for the purposes of dealing with this disease is that used in the rules issued by the Central Midwives Board, governing the practice of midwives, namely (in the section relating to the child) "Inflammation of, or discharge from, the eyes, however slight." A considerable number of the cases enumerated below are extremely mild, but it is so difficult to draw a line between "slight inflammation" and definite ophthalmia neonatorum that it is considered advisable to include inflammation of all degrees of severity in the term "Ophthalmia Neonatorum."

The following figures give some details as to the source of information and character of the cases dealt with during the year :—

The total number of cases brought to the notice of the department was 545, and they consisted of—						
(1) Mild cases	...	...	...	...	...	422
(2) Severe cases	...	...	...	...	...	116
(3) Under private treatment	...	...	...	...	...	7
(4) Not Ophthalmia neonatorum	...	...	...	...	...	20—565
Number treated in their homes under special nurse	...	...	...	...	...	206
„ attended at hospital as out-patients	...	...	...	...	...	94
„ admitted into hospital	...	...	...	...	...	34
„ treated by doctors and special nurse	...	...	...	...	...	38
„ „ „ alone	...	...	...	...	...	141
„ „ and cured in hospital	...	...	...	...	...	31
Removed outside the city	...	...	...	...	...	1—545

## INTERVAL IN DAYS BETWEEN BIRTH AND ONSET OF DISEASE.

Days.	1	2	3	4	5	6	7	8	9	Un- known	10 days and over.	Total.
Notified Cases during 1928	20	36	85	52	41	38	47	49	35	13	129	545

Arrangements have been made with the City Bacteriologist to examine the discharge in every notified case of inflamed eyes in the newly-born. This enables a prompt verification of the disease to be determined.

No. of Notifications.	Cases from which Specimens were Examined by City Bacteriologist.	No. of Cases Positive Gonorrhoea.	Percentage to Total Cases Examined.	Percentage to Total Notification.
545	54	13	24	9.9

## TABLE SHEWING INFECTION OF EYES AT ONSET.

Both Eyes.	Right Eye.	Left Eye.	Doubtful.	Total.
368	66	95	16	545

In the 95 cases where the left eye only was affected at onset the other eye became affected in 3 cases.

In the 66 cases where the right eye only was affected at onset the other eye became affected in 2 cases.

The total number of visits and revisits paid in respect of the above cases was 4,754.

A very important part of the scheme for dealing with this disease is the provision at St. Paul's Eye Hospital of 10 beds and cots for the reception of infants with their mothers, where the former can be under the immediate care of ophthalmic surgeons and nurses during the acute stage of the disease.

From the statistical table it will be seen that 34 babies were admitted with their mothers.

## RESULTS.

Number of cases under treatment at 1/1/28	...	...	30
„ „ notified during year 1928	...	...	545—575
„ „ cured	...	...	530
„ died during treatment	...	...	11
„ in Poor Law Institutions	...	...	4
„ removed to another town	...	...	1
„ under treatment 31/12/28	...	...	29—575

There was one case in which loss of sight occurred, which was due to delay in making the fullest use of the facilities afforded by the Health Committee for the treatment of Ophthalmia Neonatorum, and one in which the sight of the right eye was affected. In the absence of the care and assistance provided there can be no doubt that damage to eyesight or its total loss would have occurred in a number of cases.

MILK DEPOTS.

The milk which is supplied from these Centres and Depots (as from 1st January, 1928), consists almost entirely of Grade A Tuberculin tested milk.

The total number of persons supplied with milk during the year was 14,500, viz., 4024 on the books at the beginning of the year, and 10,476 admitted during the year. The supply of milk is given on the presentation by the applicant of a note from a doctor, and in a few instances it was allowed on production of written requests from midwives. The following statement shows the different centres and the number supplied at each, viz. :—

Centres.	Ante-Natal.	Nursing Mothers.	Infants.		Liverpool Child Welfare Association.	Totals.
			Under 1 year of age.	1 to 2 Years of Age.		
Netherfield Road ...	157	596	493	79	696	2,021
Earle Road ...	53	205	278	45	164	745
Park Road ...	183	507	399	166	417	1,672
Boaler Street ...	70	282	322	71	292	1,037
St. Anne Street ...	202	641	443	150	646	2,082
Rathbone Road ...	24	94	148	21	101	388
Mill Street ...	78	191	169	39	150	627
Agents ...	93	351	341	166	1,987	2,938
	860	2,867	2,593	737	4,453	11,510

The total quantity of milk supplied during the year was 164,171 $\frac{3}{8}$  gallons, and the bottles prepared reached a total of 523,330. The amount of dried milk supplied was 47,239 $\frac{1}{2}$  lbs.

Total cases on books, January 1st, 1928	...	...	...	4,024
„ „ admitted during 1928	...	...	...	10,476
Total supplied during 1928	...	...	...	14,500
Remaining on the books at the end of the year	...			3,974
Quarterly Average—January, February, March	...	...		4,168
„ „ April, May, June	...	...		4,122
„ „ July, August, September	...	...		3,606
„ „ October, November, December	...			3,836

The highest number being supplied with milk at one time was 4,305 during the week ended March 24th.

Since the initiation of the scheme in 1901 down to the year 1916 the number of infants fed at sterilised milk depôts was 37,827, and during the last eleven years as follows:—1918, 10,532; 1919, 9,832; 1920, 14,052; 1921, 10,509; 1922, 9,874; 1923, 11,411; 1924, 13,098; 1925, 11,890; 1926, 12,161; 1927, 10,270; 1928, 10,476; a total of 161,932.

The number of attendances of persons at the centres during the year for advice, and payment for milk, etc., was 17,052.

On one day in each week mothers attend at the centre in their district for the purpose of reviewing family circumstances when the supply of milk is either:—

Continued at the price being charged.

If the circumstances were improved, then the charge was increased.

If the circumstances were worse than when last reviewed, then the charge would be lowered.

The usual grant is for a period of 4 or 6 weeks. In exceptional cases 2 or 8 weeks.

The number of visits paid during the year to children in their own homes by the health visitors attached to the centres in order to see that the children were being properly fed and cared for and the milk properly used, was 5,245. From time to time information concerning cases is received from the district health visitors and clinics.

### HEALTH VISITORS.

The work of the health visitors continues on the same lines as in former years, and owing to the prevailing industrial and economic conditions, increasing spheres have been found for their usefulness.

Their duties are numerous, as subsequent tables will show, and, although the work is varied, it is primarily educational and preventive.

The City is divided into districts, to each of which certain health visitors are allocated, such an arrangement facilitating the carrying out of the work.

The routine work of the staff includes the following :—

Attendance at clinics for expectant mothers and visiting these cases in their homes where necessary.

Attending the ante-natal clinics where cutting out, sewing and knitting classes are held to enable and encourage the mothers to make suitable provision for themselves and their expected infants, similar classes are held at the post-natal clinics, all being well attended by the mothers.

Visiting homes where births have been notified under the Notification of Births Act.

Attendance at clinics for children from birth to five years of age, visiting these children in their own homes, and giving advice and instruction to their mothers.

Visits to cases of measles, whooping cough, influenza, pneumonia and infantile diarrhœa, and carrying out home nursing in certain cases where necessary.

Dealing with aged and infirm persons found to be living in a dirty and verminous condition.

Re-visits to women and children notified to be suffering from phthisis.

Attendances at school medical inspections and following-up, cases of physical defects and neglect found by the medical inspector by home visits.

Attendance at minor ailments clinics for school children.

Attendance at eye, ear, dental, ringworm, tonsils and adenoids clinics.

Visits to neglected and verminous school children supervising the cleansing of verminous children, and visits to school children with infectious skin diseases.

In addition to the duties enumerated above, the health visitors have given considerable assistance to the Housing Department in investigating the home conditions of those applying for houses, so that the most pressing cases should receive early consideration.

Special visits are paid to cases referred from the various voluntary organisations in the City, e.g., Liverpool Child Welfare Association, Police, Relieving Officers, Liverpool Society for Prevention of Cruelty to Children, Personal Service Society, Society for the Care of the Mentally Deficient, etc.

#### VISITS TO EXPECTANT MOTHERS.

First visits	...	...	...	...	...	...	905
Total visits	...	...	...	...	...	...	1,200

#### VISITING UNDER THE NOTIFICATION OF BIRTHS ACTS, 1907 AND 1913.

Number of births visited during the year	...	...	18,996
Re-visits to births during the year	...	...	54,403
Re-visits to infants up to 5 years of age	...	...	42,204

## OTHER VISITS.

Visits to cases and home nursing of Measles	...	...	8,573
„ „ „ „ Whooping Cough...			526
„ „ of Influenzal Pneumonia	...	...	1,767
„ „ „ Infantile Diarrhœa	...	...	1,323
Re-visits to Phthisis cases amongst women and children...			6,041

Attendances of health visitors at school medical inspections and following-up in the homes cases of physical defects, verminous and neglected children found by the school medical inspectors.

Visits to neglected and verminous school children, and ensuring the cleansing of verminous children :—

Number of visits paid to schools	...	...	8,518
„ hours spent in schools	...	...	15,379
„ children inspected in schools	...	...	47,093
„ children re-inspected in schools	...	...	140,260
„ dental inspections in schools	...	...	61,508
„ home visits to cases of physical defects	...		7,310
„ home visits to neglected and verminous school children	...	...	20,839
„ home visits to school children suffering from infectious skin diseases, etc.	...	...	1,415

Attendance at minor ailments clinics, eye, ear, tonsils and adenoids, dental and ringworm clinics :—

Number of visits to school clinics	...	...	6,419
„ hours spent at school clinics...	...		25,186
„ attendances at school clinics...	...	...	269,340

## ANTE-NATAL CLINICS.

The following figures give the number of attendances of expectant mothers at all the prematernity clinics in the city :—

	1927.	1928.
New admissions	7,079	8,702
Total attendances	30,669	38,171
Attendances of mothers at classes...	3,563	5,349

There are 15 centres at which 28 sessions are held per week.

## POST-NATAL CLINICS.

The following figures give the condition and feeding of children on admission to those post-natal clinics which are under the control of the Health Committee:—

Admissions for year ... ..	6,611
Conditions of health on admission—	
Good ... ..	4,322
Fair (under average) ... ..	1,462
Delicate ... ..	827—6,611
Method of feeding on admission—	
Breast fed entirely ... ..	4,239
Partly breast fed ... ..	611
Artificially fed entirely ... ..	1,761—6,611
Total attendances for year at all centres ... ..	84,354

There are eleven centres at which 25 sessions are held per week.

## DAY NURSERIES.

The Liverpool Day Nurseries are eight in number, six of which are under the control of the Health Committee. Children from the age of three weeks to five years are admitted to the nurseries between the hours of 7 a.m. and 7 p.m.

At one of the nurseries, children may be boarded for short periods to tide over special difficulties in the homes, usually illness of the mother, as indicated in a subsequent table.

A daily or weekly charge is made for each child. These institutions are greatly appreciated by the working class mothers when, by reason of widowhood or unemployment or incapacity of their husbands they are compelled to go out to work in order to make provision for themselves or their families. Investigation of the home circumstances is made by the Health Visitors in the case of each application and admission, in order to verify the mother's statement.

The nurseries provide a training school for nursery nurses and an excellent preliminary training for girls wishing subsequently to become hospital nurses.

The children who attend are taught clean habits and good manners, their diet, rest, play and progress being carefully supervised.

The attendances at the day nurseries are as follows:—

	Attendances.
1.—264, Westminster Road ... ..	9,374
2.—18, Gt. George Square ... ..	8,012
3.—407, Edge Lane (Day and Resident) ... ..	10,196
4.—141 and 143, Smithdown Lane ... ..	8,789
5.—Banks Road, Garston ... ..	7,159
6.—63, Everton Road ... ..	10,421
7.—61, Shaw Street ... ..	8,754

The total number of children admitted into the resident nursery at Elms House from January to December, 1928, was 127.

70 were admitted as their mothers were about to be confined.

13	„	„	„	„	going into convalescent homes.
2	„	„	„	„	going into sanatoria.
26	„	„	„	„	ill in hospital.
11	„	„	„	„	ill at home.
3	„	„	„	„	doing temporary work away from home.
2	„	„	„	„	had deserted them.

#### MIDWIVES AND MATERNITY HOMES ACT, 1926.

#### NURSING HOMES REGISTRATION ACT, 1927.

During the year 15 applications for registration were received by the Town Clerk, nine of which were registered subsequent to 1st July, 1928, when the Nursing Homes Registration Act, 1927, came into operation. After careful investigation of practice and premises the registrations were approved by the Health Committee. Eight were cancelled owing to removal, leaving 80 on the register at the end of the year. Fifteen institutions were exempted from registration as hospitals or institutions not carried on for profit, under Section 7 of the Nursing Homes Registration Act, 1927.

## INFECTIOUS DISEASES IN SCHOOLS.

The usual infectious diseases were slightly more prevalent during the year, 9,876 cases of children of school age being reported as against 8,630, 11,941, 10,832 and 8,750 for the years 1924 to 1927 respectively. There was a very considerable increase in the number of cases of mumps over that of the previous year, an outbreak occurring in the early summer. Whooping cough was also prevalent in the early months of the year, being the termination of an outbreak which commenced towards the end of 1927. Measles was less prevalent than in 1927, 2,927 cases having been reported as compared with 3,801 during the previous year. There were 11 cases of encephalitis lethargica amongst children between the ages of 5 and 15, two of which proved fatal.

Special action had to be taken on account of infectious diseases during the year as follows:—Infants' Departments were closed in 8 cases for measles, 4 for whooping cough, 3 for measles and whooping cough, whilst in two instances it was found necessary to close one or more classes only. One small school was closed on account of the simultaneous outbreak of scarlet fever and diphtheria.

On several occasions the exclusion of all children who had not previously suffered from the disease was found practicable. This procedure is not always feasible, as it would in most instances reduce the attendance below that which would render it worth while to keep the school open. In the case of outbreaks of two diseases this method is not likely to be so successful. The recent alteration of the rules of the Board of Education has, however, permitted more flexibility in the methods which can be taken to suppress epidemic diseases.

The following tables shew the number of cases of the common infectious diseases, with the ages of the children affected, and the monthly distribution of the cases:—

SCHOOL CASES OF INFECTIOUS DISEASE DURING 1928.

AGE DISTRIBUTION.														
Disease.	under 5	under 6	under 7	Total under 7	under 8	under 9	under 10	under 11	under 12	under 13	under 14	Over 14	Total 7 and over	Grand total.
Diphtheria ...	28	156	136	320	154	123	57	63	66	54	57	12	586	906
Scarlet fever ...	25	165	216	406	177	141	85	61	53	68	53	21	664	1,070
Whooping cough ...	93	538	381	1,012	122	49	16	10	5	6	1	4	213	1,225
Chicken pox ...	55	470	438	963	254	120	46	27	35	21	11	6	520	1,483
Mumps ...	61	542	717	1,320	425	161	69	49	56	61	46	18	885	2,205
Measles ...	121	1,075	808	2,004	337	179	78	50	54	43	43	139	923	2,927
														9,816

MONTHLY DISTRIBUTION.											
Disease.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Totals.
Diphtheria ...	101	78	73	69	72	92	55	55	85	73	906
Scarlet fever ...	89	69	88	83	98	82	84	74	118	86	1,070
Whooping cough ...	248	218	214	110	131	55	10	37	38	30	1,225
Chicken pox ...	109	79	84	105	202	222	70	44	82	146	1,483
Mumps ...	51	25	142	187	319	426	77	56	148	236	2,205
Measles ...	73	142	281	243	426	569	295	51	116	165	2,927

PUBLIC ELEMENTARY SCHOOLS.

				<u>1928.</u>
Number of visits to schools	...	...	...	3,245
„ found incorrect	...	...	...	30
„ of notices issued <i>re</i> defects			...	30

NOTICES TO SCHOOL TEACHERS.

The arrangements made with the Education Committee have been continued, viz., that notice shall be sent to the Education Department and postcards to the head teachers of the various schools, informing them when children from infected houses attend their schools; 8,642 cards were sent during the year, as against 8,204 in the preceding year.

CO-OPERATION WITH EDUCATION DEPARTMENT.

References from Education Department	...	8,875
References to Education Department	...	19,295
School cases investigated or followed up	...	1,100

# TUBERCULOSIS.

## NOTIFICATION.

Public Health (Tuberculosis) Regulations, 1912, and Regulations  
(No. 2), 1918.

Summary of Notifications during the period from 1st January, 1928,  
to 29th December, 1928 :—

Age-periods.	Notifications on Form A.												Total Notifica- tions o Form
	Number of Primary Notifications.												
	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and up- wards.	Total Primary Notifica- tions.	
Pulmonary—													
Males .....	10	45	136	79	136	150	228	235	219	130	48	1,416	1,649
Females .....	2	36	106	86	119	163	231	155	89	48	17	1,052	1,244
Non Pulmonary—													
Males .....	6	80	86	36	32	26	29	11	14	4	2	326	357
Females .....	5	68	81	41	42	29	31	14	4	2	2	319	344

Age-periods.	Notifications on Form B.					Number of Notifications on Form C.	
	Number of Primary Notifications.				Total Notifica- tions on Form B.	Poor Law Institutions.	Sanatoria
	Under 5	5 to 10	10 to 15	Total Primary Notifica- tions			
Pulmonary—							
Males .....	—	—	—	—	1	35	138
Females .....	—	—	—	—	—	11	67
Non-Pulmonary—							
Males .....	—	1	—	1	1	1	—
Females .....	—	2	—	2	3	3	3

Form "A" is used by Medical Practitioners on first becoming aware that a patient is suffering from tuberculosis, unless he has reasonable grounds for believing that the case has already been notified.

Form "B" is used by School Medical Officers to make a weekly return to the Medical Officer of Health of all cases of tuberculosis coming under their notice in carrying out the duties of medical inspection of children in Public Elementary Schools.

Form "C" is for the use of the Medical Officers of Poor Law Institutions and Sanatoria to make a weekly return of cases admitted to their Institutions, and applies only to cases which have been previously notified on Form "A."

The advantages which should result from the compulsory notification of tuberculosis are nullified to some extent by delay in notification until the disease is in an advanced stage, as well as by failure to secure notification in many cases. Statistical tables which follow indicate that 42 per cent. of the new pulmonary cases examined by the Tuberculosis Officers were in an advanced stage of disease, that 22 per cent. of them were deceased before the termination of the year, and that, out of 1,148 deaths from all forms of tuberculosis enquired into, 216 had not previously been notified.

All patients notified by medical practitioners are given an opportunity of attending for examination at one of the Tuberculosis Institutes unless it is stated on the notification form that no action of this description is desired. It is exceptional to find that medical practitioners do not wish their patients to be examined by a Tuberculosis Officer or that the patients themselves refuse to seek his advice.

### TUBERCULOSIS INSTITUTES AND DISPENSARY SYSTEM.

The Tuberculosis Institutes are three in number, and are situated within the Northern, Central and Southern areas of the city. In these branches there are engaged four tuberculosis officers and nine whole-time nurses.

A statistical summary of the work of the Institutes in relation to diagnosis is given in table 1. It is noteworthy that a definite diagnosis was made in each of 3,328 new patients (exclusive of contacts), of whom 1,655 were considered to be suffering from a disability which was not tuberculous in nature, and treatment at the public expense was not granted. This rejection rate of 50 per cent. is a measure of the protection of the sanatorium accommodation from use by patients suffering from diseases other than tuberculosis.

TABLE 1.

Number of Patients		Under observa- tion pending diagnosis on Jan. 1st.	Applying for the first time during the year.	TOTAL.	Found to be			Under observa- tion pending diagnosis on Dec. 31st	Ceased attendance before completion of diagnosis	
					Suffering from Tuberculosis.		Not suffering from Tuber- culosis.			
Pul- monary		Non-pul- monary								
New cases examined during the year (exclud- ing "Contacts")—										
Adults—Male	...	27	1,170	1,197	615	72	416	29	65	
Female	...	28	974	1,002	442	76	407	21	56	
*Children—Male	...	31	692	723	102	148	438	10	25	
Female	...	26	623	649	94	124	394	3	34	
"Contacts" examined during the year—										
Adults—Male	...	—	66	66	1	2	61	—	2	
Female	...	—	124	124	8	—	114	—	2	
*Children—Male	...	—	358	358	8	2	346	—	2	
Female	...	—	342	342	5	2	335	—	—	
TOTALS	...	112	4,349	4,461	1,275	426	2,511	63	186	
Insured Persons (included above)—										
Male	...	24	968	992	480	47	396	22	47	
Female	...	15	417	432	180	35	185	11	21	

TABLE II.—PULMONARY.  
THE CONDITION OF PATIENTS WHOSE CASE RECORDS ARE IN THE POSSESSION OF THE TUBERCULOSIS INSTITUTES.

Condition at the time of the last record made during the year 1928.			Cases arising prior to 1922.					Cases arising in 1922.					Cases arising in 1923.					Cases arising in 1924.					Cases arising in 1925.					Cases arising in 1926.					Cases arising in 1927.					Cases arising in 1928.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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				Group 1	Group 2	Group 3	Total Class T.B. PLUS.		Group 1	Group 2	Group 3	Total Class T.B. PLUS.		Group 1	Group 2	Group 3	Total Class T.B. PLUS.		Group 1	Group 2	Group 3	Total Class T.B. PLUS.		Group 1	Group 2	Group 3	Total Class T.B. PLUS.		Group 1	Group 2	Group 3	Total Class T.B. PLUS.		Group 1	Group 2	Group 3	Total Class T.B. PLUS.	Group 1	Group 2	Group 3	Total Class T.B. PLUS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
ALIVE.	DISCHARGED AS CURED.	Adults	M	91	9	...	...	9	5	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

\* Deaths occurring on and after January 1st, 1922, only.

TABLE III.—NON-PULMONARY.  
THE CONDITION OF PATIENTS WHOSE CASE RECORDS ARE IN THE POSSESSION OF THE TUBERCULOSIS INSTITUTES.

Condition at the time of the last record made during the year 1928.			Cases arising prior to 1922.					Cases arising in 1922.					Cases arising in 1923.					Cases arising in 1924.					Cases arising in 1925.					Cases arising in 1926.					Cases arising in 1927.					Cases arising in 1928.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
			Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	TOTAL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
ALIVE.	DISCHARGED AS CURED.		Adults	M	4	...	1	2	7	4	...	...	1	5	2	...	1	...	3	1	...	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

\* Deaths occurring on and after January 1st, 1922, only

## DIAGNOSIS.

The chief aids to diagnosis in doubtful cases were :—

- (a) Examination by X-ray;
- (b) continued observation while following an ordinary occupation;
- (c) the repeated examination of the sputum;
- (d) a period of observation in hospital, if necessary.

Use has been made of examination by X-ray in cases in which there were diagnostic difficulties. During the year 228 cases were so examined, with the result that in 80 cases the evidence was in favour of a tuberculous infection, in 92 cases was against the presence of this disease, and in 56 cases the X-ray evidence was very inconclusive. The result of the X-ray examination in conjunction with clinical evidence has enabled the tuberculosis officer to overcome diagnostic difficulties in the great majority of the cases which, at first sight, appeared to be doubtful.

The X-ray apparatus used for this purpose is situated at the Fazakerley Sanatorium.

The fact that out of 1,646 admissions to sanatoria and hospitals only 10 patients were considered subsequently to be non-tuberculous, is an indication that these safeguards are satisfactory in practice. Upon the negative side of the diagnosis question it is uncommon to find rejected cases returning to the tuberculosis officer with undoubted disease of a tuberculous nature.

## THE CONDITION OF PATIENTS KNOWN TO THE TUBERCULOSIS OFFICERS.

A statistical return showing in summary form the condition of all patients whose case records are in the possession of the Tuberculosis Institutes at the end of the year, arranged according to the years in which the patients first came under public medical treatment, and according to their classification, is given in the two tables, Table II, relating to pulmonary cases and Table III to non-pulmonary cases.

It is noteworthy that of 1,275 new pulmonary cases accepted during the year 535 (42 per cent.) were in a very advanced stage of disease. By

the end of the year 275 (22 per cent.) of the new cases arising during that year were deceased. There is but little hope of recovery for patients who come under treatment at so late a stage of their illness.

A statistical summary of the work of the Tuberculosis Institutes so far as all cases on the dispensary registers are concerned, is given in Table IV, and at the foot thereof are included a few statistics of a general nature.

TABLE IV.  
PATIENTS UNDER THE SUPERVISION OF THE TUBERCULOSIS OFFICERS

Cases on the dispensary register at the beginning of the year	6,447	Cases written off the dispensary register as cured ... ..	127
New cases examined during the year ... ..	4,331	New cases presenting no evidence of tuberculosis ...	2,511
Cases transferred from other areas and "lost sight of" cases returned ... ..	282	Cases transferred to other areas and cases "lost sight of"...	827
		Deceased during the year ...	856
		Cases on the dispensary register at the end of the year ...	6,739
Total ...	11,060	Total ...	11,060

1. Number of attend- ances of patients (in- cluding contacts) at the dispensaries ... ..	Insured Non-insured	6,797 12,653	7. Number of domiciliary reports received during the year in respect of patients under treatment at home. (a) Insured persons ... .. (b) Non-insured persons ... ..	4,8 4,
2. Number of cases in which the period of observation for the purpose of diagnosis exceeded two months ...		12	8. Number of patients to whom dental treatment was given, at or in connection with the dispensaries ...	Ni
3. Number of consultations with medical practitioners:— (a) At the homes of patients ... (b) Otherwise ... ..		633 4,098	9. Number of (a) Specimens of sputum, etc., ex- amined ... .. (b) X-Ray Examinations made in connection with dispensary work ... ..	3,8 :
4. Number of other visits paid by Tuberculosis Officers to the homes of patients ... ..		384	10. Number of reports rendered to the School Medical Department ...	4,
5. Number of visits paid by nurses or health visitors to the homes of patients for dispensary purposes ...		32,542	11. Number of reports rendered to the Ministry of Pensions ... ..	
6. Number of patients under domiciliary treat- ment on December 31st	Insured Non-insured	1,274 882		

\* Under 15 years of age

In Table V is given a statistical analysis of the patients under dispensary treatment at the end of the year.

TABLE V.

PATIENTS UNDER DISPENSARY TREATMENT AT THE END OF THE YEAR.

		Pulmonary.	Non-pulmonary.	Totals.
INSURED PERSONS	Male ... ..	7	—	7
	Female ... ..	2	1	3
NON-INSURED PERSONS	Male Adults ... ..	10	6	16
	Female Adults ... ..	33	9	42
	Male Children* ... ..	44	23	67
	Female Children* ... ..	51	20	71
TOTALS ...	... ..	147	59	206

\* Under 15 years of age.

In Table VI is given a statistical summary of the patients who, not needing active treatment, were under dispensary supervision at the end of the year.

TABLE VI.

PATIENTS NOT NEEDING TREATMENT WHO WERE UNDER DISPENSARY SUPERVISION AT THE END OF THE YEAR.

		Pulmonary.	Non-pulmonary.	Totals.
INSURED PERSONS	Male ... ..	544	111	655
	Female ... ..	209	74	283
NON-INSURED PERSONS	Male Adults ... ..	137	65	202
	Female Adults ... ..	443	134	577
	Male Children* ... ..	412	487	899
	Female Children* ... ..	367	408	775
TOTALS ...	... ..	2112	1279	3691

\* Under 15 years of age.

## NURSING AND EXTRA NOURISHMENT.

The domiciliary nursing of both pulmonary and non-pulmonary cases is carried out by the Liverpool Queen Victoria District Nursing Association, with whom the Liverpool Hospitals Committee have an agreement and to whom is made a grant-in-aid. During the year, 162 pulmonary and 129 non-pulmonary cases were nursed in their homes, and to these cases 9,817 visits were paid.

Extra nourishment was granted to patients who needed it as a part of their treatment and who were unable to afford to purchase it for themselves. The staple grant is milk and (or) eggs and (or) a meat juice preparation. To the patient is given an order which can be presented to any tradesman. No orders are issued to a patient whose income exceeds the full pension payable by the Ministry of Pensions to a totally disabled pensioner. This scale serves as a useful guide to the tuberculosis officer in determining whether extra nourishment should be provided free of cost or not, when examination has shewn that for medical reasons additional diet is desirable. All extra nourishment orders expire at the end of each quarter and are not renewed until the patient makes a further application and, upon examination, it is shewn that renewal is desirable. An arrangement is in force whereby the names of all patients to whom extra nourishment was granted were referred to the Registration Department of the Liverpool Council of Voluntary Aid, from whom in return reports were received as to the number of other sources from which the patient or the patient's family were receiving assistance. By this means overlapping of the Public Health Department with voluntary agencies, the Education Committee and the Poor Law Guardians has been minimised.

At the end of the year 150 patients were in receipt of extra nourishment, involving the daily provision of 153 pints of milk and 19 eggs.

## DOMICILIARY TREATMENT.

This form of treatment is arranged by the tuberculosis officers in such cases as have been examined by them, and in which it is considered to be the most appropriate form of treatment. Co-operation between the medical practitioners and the tuberculosis officers is secured in every case by means of a quarterly report from the practitioners. At the end of the year, 2,156 patients remained under domiciliary treat-

ment, of whom 1,274 were persons insured under the National Health Insurance Act, and were in receipt of treatment from their panel doctors, and 882 were not insured, and were under the treatment of doctors of their own choice. The domiciliary reports received relating to insured persons numbered 4,851, and those relating to non-insured persons numbered 4,718. Table VII shows the position at end of the year.

TABLE VII.

PATIENTS UNDER DOMICILIARY TREATMENT AT THE END OF THE YEAR.

		Pulmonary.	Non-pulmonary.	Totals.
INSURED PERSONS	Male ... ..	930	36	966
	Female ... ..	281	27	308
NON-INSURED PERSONS	Male Adults ...	139	12	151
	Female Adults ...	459	38	497
	Male Children*	89	39	128
	Female Children*	71	35	106
TOTALS ...	... ..	1969	187	2156

\* Under 15 years of age.

The arrangements for home treatment, comprising attendance by medical practitioners and the provision of drugs, were described in the 1925 report. The home treatment scheme continues to work smoothly.

#### DENTAL TREATMENT.

There is no provision for dental treatment at the Tuberculosis Dispensaries. Pensioners suffering from dental disease of a character which intereferes with the efficacy of treatment for tuberculosis are referred to the Ministry of Pensions, and in many instances treatment has been afforded by the latter. Patients under treatment in Fazakerley and Broadgreen Sanatoria, however, are under the

supervision of a visiting dental surgeon. The following is a summary of his work during the year :—

Fillings	...	...	...	...	...	62
Extractions under gas	...	...	...	...	...	5
Extractions under local anæsthetic	...	...	...	...	...	444
Extractions without an anæsthetic	...	...	...	...	...	1
Miscellaneous	...	...	...	...	...	134

The miscellaneous work includes scaling, the opening up of septic pulps, the removal of sequestra, etc.

### CO-OPERATION AND CO-ORDINATION.

The activities of the Tuberculosis Institutes are now so well known that new or suspected cases of tuberculosis are referred from many sources for examination and treatment.

The most important source of reference is the medical profession. It is the practice of the tuberculosis officers to give every notified case an opportunity of attending for examination with a view to public medical treatment, and it is encouraging to note that only occasionally do patients refuse to be examined. Once patients have been examined they are kept under supervision until the disease is arrested or they are deceased or have left Liverpool or cannot be traced. Patients leaving Liverpool are notified to the Medical Officer of Health of the district in which they have gone to reside, and with each notification is sent a report as to their condition, treatment, and fitness or otherwise for employment, together with information in accordance with the statistical requirements of memorandum 37/T.

Co-operation between the Ministry of Pension and the tuberculosis officers continues, and during the year 639 reports were completed in reference to tuberculous pensioners.

Arrangements are in force between the department and the general hospitals which have been approved for the treatment of tuberculosis by the Minister of Health, namely, the Royal Infirmary, the Royal Southern Hospital, the David Lewis Northern Hospital, the Stanley Hospital, the Royal Liverpool Children's Hospital, and the Hahnemann Hospital, whereby the latter accept for treatment surgical cases and, except in the case of the Hahnemann Hospital, emergency pulmonary cases of tuberculosis at the expense of the Local Authority. It is a

condition of payment that (1) prompt notification of admission for treatment be received; (2) the Tuberculosis Officer shall have access to the case when under treatment should he so desire; (3) a full report is rendered upon discharge as to the treatment afforded, the result thereof, and the condition of the patient upon discharge. These arrangements work smoothly, and valuable work is in progress.

Co-operation between the Tuberculosis Officers and the School Medical Officers is secured inasmuch as all definite and suspected cases discovered by the School Medical Officers are referred by the latter to the Tuberculosis Officer for examination, treatment and report. It is also the practice of the Tuberculosis Officers to report to the School Medical Officers their findings in any patient of school age examined. These cross references are very numerous, and during the year the Tuberculosis Officers rendered 4,195 reports to the School Medical Department.

### SANATORIA.

The following institutions were utilised during the year to accommodate patients suffering from pulmonary and non-pulmonary tuberculosis :—

SANATORIA :—Fazakerley, Broadgreen, Delamere, the West Kirby Children's Convalescent Home, the Ellen Gonner Home, Freshfield, and, to a small extent, Daneswood, East Anglian, Malting's Farm, Marillac, and Killingbeck.

HOSPITALS :—The Royal Infirmary, the Royal Southern Hospital, the David Lewis Northern Hospital, the Stanley Hospital, the Hahnemann Hospital, the Liverpool Hospital for Children, Leasowe; the Royal Liverpool Children's Hospital, the Liverpool Chest Hospital, and the Crofton Convalescent Hospital.

The Fazakerley and Broadgreen Sanatoria are situated within the city boundary, and are equipped and administered by the Port Sanitary and Hospitals Committee. Their accommodation and staff at the end of the year were as follows :—

#### FAZAKERLEY SANATORIUM. Beds, 335.

Staff :—Medical Superintendent, Principal Resident Medical Officer, Consulting Surgeon, Visiting Dental Surgeon, Consulting Throat Specialist, Radiologist, three Assistant Resident Medical Officers, Matron, Sisters and Nursing Staff numbering 60.

## NORMAL ALLOCATION OF BEDS.

	Observa- tion.	Pulmonary Tuberculosis.		Non-pulmonary Tuberculosis.		TOTAL.
		"Sana- torium" Cases	"Advanced" Cases	Disease of Bones and Joints.	Other Conditions	
Adult Males ...	4	81	57	36	11	189
Adult Females ...	4	44	17	12	5	82
Children under 15	6	33	10	5	10	64
TOTAL ...	14	158	84	53	26	335

## BROADGREEN SANATORIUM. Beds, 336.

Staff :—Medical Superintendent, Consulting Surgeon, Visiting Dental Surgeon, Radiologist, four Assistant Resident Medical Officers, Matron, Sisters and Nursing staff numbering 61.

## NORMAL ALLOCATION OF BEDS.

	Observa- tion.	Pulmonary Tuberculosis.		Non-pulmonary Tuberculosis.		TOTAL.
		"Sana- torium" Cases	"Advanced" Cases	Disease of Bones and Joints.	Other Conditions	
Adult Males ...	—	110	64	—	—	174
Adult Females ...	—	72	50	—	—	122
Children under 15	—	40	—	—	—	40
TOTAL ...	—	222	114	—	—	336

The remaining Institutions named in the opening paragraphs are responsible for the balance of the beds in use, namely, 304. The normal

total accommodation for patients suffering from tuberculosis consists of 975 beds, allocated in the following manner:—

TOTAL NUMBER OF BEDS NORMALLY AVAILABLE FOR PATIENTS.

	Observation.	Pulmonary Tuberculosis.		Non-pulmonary Tuberculosis.		TOTAL.
		"Sanatorium" Cases.	"Advanced" Cases	Disease of Bones and Joints.	Other Conditions	
Adult Males ...	4	229	142	19	19	413
Adult Females ...	4	137	78	14	7	240
Children under 15...	6	115	14	130	57	322
TOTAL ...	14	481	234	163	83	975

The extent of residential treatment afforded during the year is shown in Table VIII.

TABLE VIII.

	In Institutions on Jan. 1st.	Admitted during the year.	Discharged during the year.	Died in the Institutions.	In Institutions on Dec. 31st.
NUMBER OF PATIENTS :—					
Adults—Male					
Pulm. ...	349	668	521	151	345
Non-pulm. ...	48	71	67	4	48
Female					
Pulm. ...	216	394	327	82	201
Non-pulm. ...	16	76	70	—	22
Children*—Male					
Pulm. ...	56	63	65	3	51
Non-pulm.	103	149	138	16	98
Female					
Pulm. ...	94	78	75	10	87
Non-pulm.	63	127	110	11	69
NUMBER OF OBSERVATION CASES :—					
Adults—Male ...	—	9	6	—	3
Female ...	—	5	5	—	—
Children*—Male ...	—	4	4	—	—
Female ...	—	2	2	—	—
TOTALS	945	1,646	1,390	277	924

\* Under 15 years of age.

A return showing the immediate results of treatment of patients discharged from residential institutions during the year is given in Table IX.

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# THE LIVERPOOL HOSPITAL FOR CHILDREN.

This Institution is situated at Leasowe, in the Wirral Peninsula, by the edge of the sea, and affords accommodation for children suffering from non-pulmonary tuberculosis. It is administered by the Liverpool Child Welfare Association, and approximately 145 beds are allocated to Liverpool cases.

The following tables of work during 1928 have been kindly furnished by the Senior Medical Officer, Dr. T. Hartley Martin, and indicate the scope and results of the work carried out. Table A classifies the discharged Liverpool patients according to the localisation of the disease.

## LIVERPOOL CASES DISCHARGED FROM LEASOWE HOSPITAL DURING 1928.

TABLE A.

LESION.	Totals discharged.	Non-tuberculous.	Tuberculous.	CONDITION ON DISCHARGE.						Average Duration of stay in days	Percentage discharged, disease quiescent.
				Disease quiescent.	Improved.	Removed by parents.	Transferred.	Not improved.	Died.		
Tuberculous disease of the spine ...	14	—	14	12	—	—	—	—	2	725	85·7%
Tuberculous disease of the hip ...	13	3	10	8	—	1	—	—	1	356	80·0%
Tuberculous disease of the knee ...	18	—	18	18	—	—	—	—	—	421	100·0%
Tuberculous osteitis ...	19	—	19	14	—	—	1	1	3	364	73·7%
Tuberculous adenitis	39	1	38	36	—	2	—	—	—	171	94·7%
Tuberculous peritonitis ...	39	—	39	33	—	2	—	1	3	253	84·6%
Lupus ...	4	—	4	—	4	—	—	—	—	452	—
TOTALS ...	146	4	142	121	4	5	1	2	9	324	85·0%

The 121 patients discharged with the disease quiescent represent 85 per cent. of all tubercular cases treated and 88 per cent. of the tuberculous cases treated to completion.

The work in the artificial light department continues to yield good results. This department has been enlarged so that it contains eight pairs of long flame carbon arcs, four mercury vapour lamps, and also a Kromyer and a Tungsten arc. It is now possible to give light treatment to all patients in need of it. All cases are given general light baths, and a large number also receive more localised irradiation from the mercury vapour lamps. The most striking results are to be seen in lesions such as tuberculous disease of the ankle joint and elbow joint, tuberculous foci on the hands and feet, tuberculous peritonitis and tuberculous cervical adenitis after curettage has been performed.

The after-care work in reference to Liverpool cases discharged from Leasowe is carried out at the Tuberculosis Institutes. Table B is compiled from records thus made, and the figures indicate that in a high proportion of cases a very satisfactory condition is maintained subsequent to discharge.

TABLE B.

Liverpool cases discharged quiescent in	Numbers.	Percentage of cases quiescent year ending December 31st.						Percentage remaining quiescent without relapse since discharge.
		1920 to 1923	1924	1925	1926	1927	1928	
1919 ...	84	86%	...	...	...	...	...	80%
1920 ...	86	89.5%	...	...	...	...	...	79%
1921 ...	90	86.7%	...	...	...	...	...	81%
1922 ...	77	85.8%	...	...	...	...	...	74%
1923 ...	81	...	95%	91%	91%	...	...	80%
1924 ...	80	...	...	87%	87%	90%	...	76%
1925 ...	86	...	...	...	94%	89%	96%	86.5%
1926 ...	110	...	...	...	...	89%	94%	87%
1927 ...	132	...	...	...	...	...	91%	91%

Table C shows the average length of stay of cases which, on discharge, were quiescent and gives a comparison with similar cases discharged during the years 1919-1927.

TABLE C.

				Cases discharged in 1928.			Cases discharged 1919-1927.		
				Numbers.	Average duration of stay in days.	Percentage disease quiescent at date of discharge.	Numbers.	Average duration of stay in days.	Percentage disease quiescent at date of discharge.
Tuberculous spine	...	14	725	85.7%	169	726	63.9%		
„ hip	...	10	356	80%	111	689	88.3%		
„ knee	...	18	421	100%	80	484	88.7%		
„ osteitis	...	19	364	73.7%	272	484	85.3%		
„ adenitis	...	38	171	94.7%	155	239	92.2%		
„ peritonitis	...	39	253	84.6%	205	218	77%		
Lupus	...	4	452	—	15	219	20%		

## AFTER-CARE.

The after-care arrangements in force are as follows: -

- (1) The periodic examination by the Tuberculosis Officers of all cases under public medical treatment.
- (2) Visits paid to patients in their homes by the nurses attached to the Tuberculosis Institutes, and by the health visitors and sanitary inspectors employed by the Health Committee.
- (3) Visits paid to patients in their homes by the nurses of the Queen Victoria District Nursing Association.
- (4) The reference of cases presenting peculiar difficulties to voluntary associations, such as the Child Welfare Association, the Personal Service Society, etc.

During the year the nurses attached to the Tuberculosis Institutes made 12,315 home visits. The health visitors and sanitary inspectors made 10,410 home visits. All these visits are the subject of report to the Tuberculosis Officer concerned. The home visits of the nurses of the Queen Victoria District Nursing Association, to the number of 9,817, have already been referred to.

## LEGISLATION AND REGULATIONS.

## PUBLIC HEALTH ACT, 1925.

Section 62 of the Public Health Act, 1925, gives power to a Local Authority to obtain a magistrate's order for the removal to an institution of a patient suffering from pulmonary tuberculosis so housed that there is danger of the spread of infection. Although it has not been found necessary to take action under this Act, the possession of the power to do so has proved valuable in persuading to enter a sanatorium patients who would not otherwise have done so.

## PUBLIC HEALTH (PREVENTION OF TUBERCULOSIS) REGULATIONS, 1925.

These regulations give power to the Local Authority to prevent patients suffering from tuberculosis in an infectious stage from handling milk under conditions which give rise to the danger of the spread of infection through the medium of the milk. Careful enquiries are made as to the nature of the employment of all tuberculous patients coming under supervision, particularly in reference to pulmonary cases with a positive sputum. During the year two persons suffering from tuberculosis in an infectious form were found to be living in a dairy. Both patients were too ill to be able to follow any form of employment, and they willingly agreed to refrain from attempting to take any part in the milk trade.

NON-PULMONARY TUBERCULOSIS.

An enquiry was made by the Public Health Department into 555 new cases of non-pulmonary tuberculosis arising during 1928, with the following results:—

Ward.	Cases.	Rate per 10,000.	Average for previous 5 years.
Exchange ... ..	58	7·0	10·7
Abercromby ... ..	43	9·5	8·8
Everton ... ..	90	7·7	8·8
Kirkdale ... ..	48	7·5	9·6
Edge Hill ... ..	59	6·4	7·7
Toxteth ... ..	58	5·6	6·5
Walton ... ..	56	6·2	6·4
West Derby East ... ..	70	7·2	7·4
Wavertree ... ..	28	3·0	6·2
Sefton Park ... ..	10	3·3	2·9
Garston ... ..	16	5·0	6·7
Fazakerley ... ..	12	2·8	4·7
Woolton ... ..	7	9·5	9·6
Whole city ... ..	555	6·46	7·71

There is a small increase from 537 in 1927 to 555 in 1928 in the new cases of non-pulmonary tuberculosis enquired into.

The following figures summarise the cases of non-pulmonary tuberculosis enquired into during the years 1927-1928 inclusive, divided into group A, where there was no history of exposure to an open case of tuberculosis, and group B, where there was a history of exposure :—

Site of Disease.	Group A. No history of exposure.	Group B. History of exposure.	Proportion of total expressed as a percentage.	
			Group A.	Group B.
Bones and joints ... ..	1113	97	24.7%	19.1%
Abdominal ... ..	972	122	21.6%	24.1%
Peripheral glands ... ..	1434	171	31.8%	33.7%
Meninges and brain ... ..	464	68	10.3%	13.4%
Skin ... ..	142	19	3.1%	3.7%
Urino-genital ... ..	112	5	2.5%	1.0%
Other sites and ill-defined	272	25	6.0%	4.9%
Totals ... ..	4509	507		

The principal differences appear to lie in an excess of bone and joint disease among cases giving no history of exposure to open tuberculosis, and an excess of abdominal disease and meningitis among those with a history of such exposure.

## NOTIFICATIONS AND DEATHS.

During the year enquiries made into a number of fatal cases of tuberculosis revealed the fact that a considerable proportion took place in cases which had not been notified during the lifetime of the patient.

In Table XI is given the results of this enquiry, together with those of a similar one during the years 1923-1928 inclusive.

TABLE XI.

Year	Total Number of deaths enquired into.	Number of deaths in cases not previously notified or referred in any other way.	Notifications prior to death, or other references, within the time specified at the head of each column.						Number of these cases known clinically to the Tuberculosis Officers before death took place.
			Within 2 weeks of death.	Within 2-4 weeks of death.	Within 1-3 months of death.	Within 3-6 months of death.	Within 6-12 months of death.	Over 12 months prior to death.	
1923	1,239	278	81	78	166	148	108	380	768
1924	1,207	249	68	88	166	139	126	371	757
1925	1,218	273	84	81	168	127	128	357	737
1926	1,203	200	78	58	166	118	147	436	807
1927	1,125	231	85	66	144	105	103	391	728
1928	1,148	216	78	52	155	100	114	433	781

It is noteworthy that a considerable proportion of the cases (19 per cent.) were not reported until death had taken place, and an additional 11·3 per cent. were only notified within a month of death. Approximately one-third of the number of persons dying from tuberculosis, therefore, had no opportunity given to them of making use of the facilities for treatment at the disposal of the Port Sanitary and Hospitals Committee. Doubtless there are several reasons which combine to produce so high a figure, such as the failure of patients to consult a doctor until the very end of illness, doubt and difficulty in regard to the diagnosis, and the failure on the part of doctors to notify cases although a positive diagnosis has been made.

#### DEATHS FROM PULMONARY TUBERCULOSIS.

The number of deaths from pulmonary tuberculosis in Liverpool from 1871 to 1928, together with the number of new cases notified, and the death rate which prevailed in England and Wales is given in Table XII.

TABLE XII.

## DEATHS FROM PULMONARY TUBERCULOSIS.

Years.	Cases notified.	Number of deaths.	Death rate per 1,000 Liverpool.	Death rate per 1,000 England and Wales.	
1871 to 1880 .....	Average yearly figures	Nil	1,506	2·90	2·24
1881 to 1890 .....		Nil	1,260	2·35	1·81
1891 to 1900 .....		Nil	1,171	1·92	1·42
1901 to 1910 .....		2,216*	1,233	1·68	1·15
1911 to 1920 .....		2,812*	1,214	1·55	1·10
1921.....	2,164	1,048	1·28	0·85	
1922.....	2,078	1,086	1·32	0·85	
1923.....	2,081	1,046	1·26	0·80	
1924.....	2,345	1,056	1·26	0·80	
1925.....	2,687	1,051	1·25	0·79	
1926.....	2,467	1,033	1·21	0·73	
1927.....	2,291	975	1·14	0·74	
1928.....	2,468	1,021	1·18	—	

\* Voluntary notification from 1901 to 1911.

In Table XIII a similar return is made in respect of deaths from non-pulmonary tuberculosis, etc.

TABLE XIII.  
DEATHS FROM NON-PULMONARY TUBERCULOSIS.

Years.	Cases notified.	Number of deaths.	Death rate per 1,000 Liverpool.	Death rate per 1,000 England and Wales.	
1871 to 1880 .....	Average yearly figures	Nil	481	·90	·65
1881 to 1890 .....		Nil	527	·98	·64
1891 to 1900 .....		Nil	500	·82	·61
1901 to 1910 .....		100*	416	·56	·49
1911 to 1920 .....		716*	349	·45	·37
1921.....	595	294	·36	·27	
1922.....	553	240	·29	·23	
1923.....	498	263	·32	·22	
1924.....	692	216	·26	·21	
1925.....	828	232	·28	·19	
1926.....	604	217	·26	·18	
1927.....	578	204	·24	·17	
1928.....	648	178	·21	—	

\* Voluntary notification from 1901 to 1911.

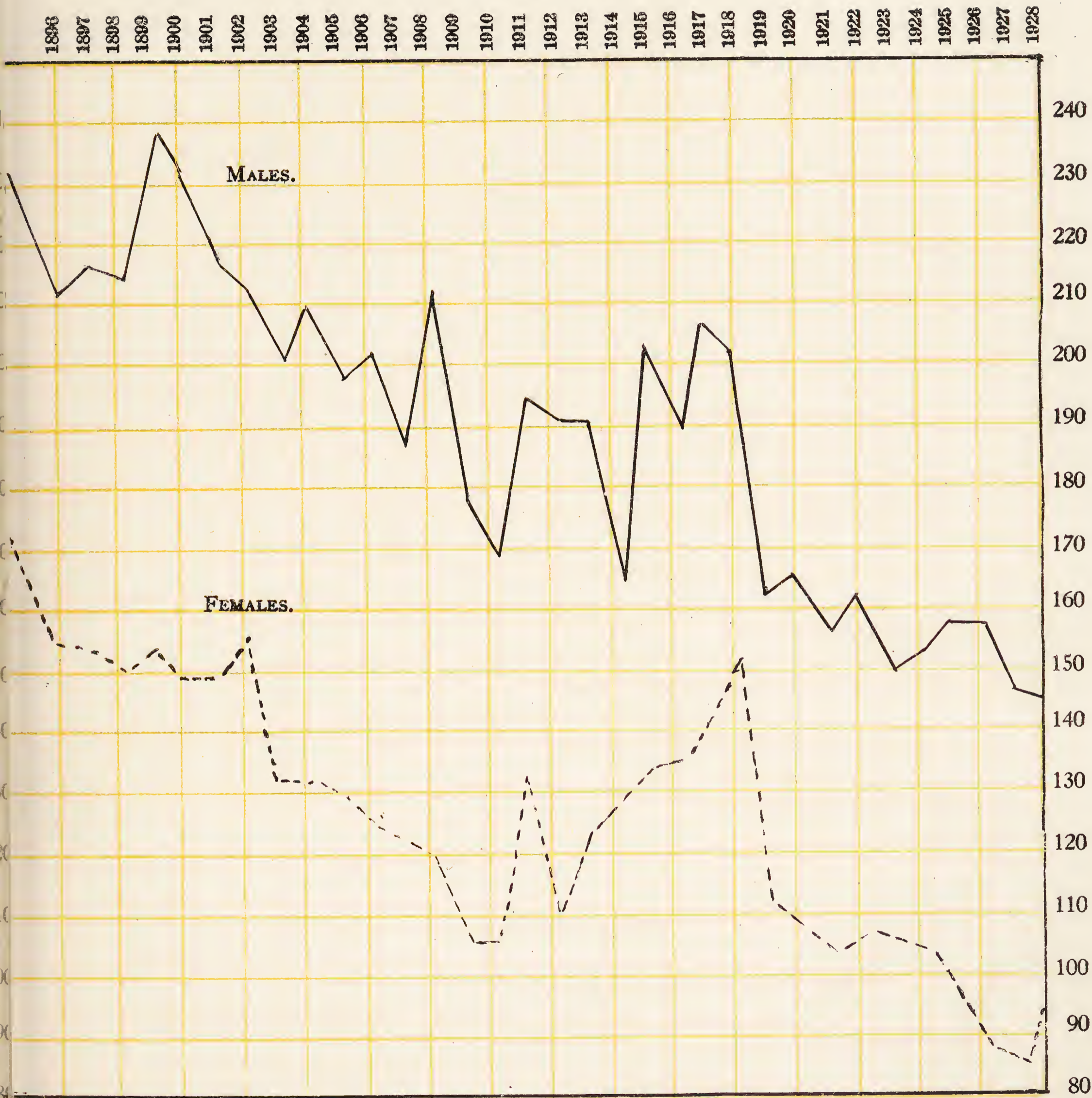
The age and sex distribution of deaths from both pulmonary and non-pulmonary tuberculosis are given in Table XIV.

TABLE XIV.  
AGE PERIODS OF DEATHS FROM TUBERCULOSIS.

Age Periods.	PULMONARY.		NON-PULMONARY.	
	Males.	Females.	Males.	Females.
0—1	4	3	8	6
1—5	9	11	31	23
5—10	8	6	12	12
10—15	4	19	7	10
15—20	45	62	7	7
20—25	63	78	8	6
25—35	100	91	9	3
35—45	128	65	5	4
45—55	120	51	4	5
55—65	87	24	7	1
65 and upwards	31	12	—	3
TOTALS ...	599	422	98	80

# LIVERPOOL.

PHTHISIS DEATH RATES PER 100,000 OF POPULATION.



# LIVERPOOL

PHYSIS DEATH RATES PER 1000



The distribution of deaths from pulmonary tuberculosis according to the districts in which the patients resided and according to the quarter of the year during which death took place is given in Table XV.

TABLE XV.

## DEATHS FROM PULMONARY TUBERCULOSIS IN DISTRICTS.

DISTRICTS.	QUARTERS.								YEAR 1928.		
	March.		June.		Sept.		Dec.		Totals		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.&F.
Exchange ... ..	27	23	20	22	15	13	30	12	92	70	162
Abercromby ... ..	5	8	8	3	5	7	14	2	32	20	52
Everton ... ..	37	21	26	18	22	9	25	18	110	66	176
Kirkdale ... ..	11	12	16	10	7	6	14	8	48	36	84
Edge Hill ... ..	18	7	8	6	9	8	11	9	46	30	76
Toxteth ... ..	31	10	27	9	15	9	16	21	89	49	138
Walton ... ..	25	18	17	12	12	11	22	14	76	55	131
West Derby (East) ... ..	15	8	17	16	12	9	15	13	59	46	105
Wavertree ... ..	9	10	9	10	7	8	5	9	30	37	67
Toxteth (East) ... ..	2	2	2	—	3	2	1	1	8	5	13
Fazakerley ... ..	1	...	2	1	3	3	2	2	8	6	14
Woolton ... ..	...	...	...	...	...	2	1	...	1	2	3
City ... ..	181	119	152	107	110	87	156	109	599	422	1021

N.B.—Deaths in public institutions are transferred to the districts whence the patients came.

A similar return in respect of deaths from non-pulmonary tuberculosis is given in Table XVI.

TABLE XVI.  
DEATHS FROM NON-PULMONARY TUBERCULOSIS IN DISTRICTS

DISTRICTS.	Tubercular Peritonitis.		Tubercular Meningitis.		Other forms of Tuberculosis.		YEAR 1928. Totals		
	M.	F.	M.	F.	M.	F.	M.	F.	M.&F.
Exchange ... ..	2	1	4	5	4	1	10	7	17
Abercromby... ..	...	3	3	2	...	2	3	7	10
Everton ... ..	2	4	9	3	4	11	15	18	33
Kirkdale ... ..	1	...	4	5	3	1	8	6	14
Edge Hill ... ..	...	2	2	2	6	1	8	5	13
Toxteth ... ..	2	4	5	2	10	2	17	8	25
Walton ... ..	...	...	9	2	7	2	16	4	20
West Derby (East) ... ..	1	1	5	10	4	2	10	13	22
Wavertree ... ..	1	..	2	1	2	2	5	3	8
Toxteth (East) ... ..	1	1	1	1	1	2	2	4	7
Fazakerley... ..	...	3	1	...	2	2	3	5	8
Woolton ... ..	...	...	...	...	...	...	...	...	...
City ... ..	10	19	45	33	43	28	98	80	178

N.B.—Deaths in public institutions are transferred to the districts whence the patients came.

## VENEREAL DISEASES.

The purpose of the establishment by the Corporation of venereal disease schemes is to afford facilities for the diagnosis and treatment of these diseases in accordance with the recommendations of the Royal Commission in 1917.

The recommendations may be summarised as follows :—

1. That opportunities should be afforded to sufferers to have free and expert treatment.
2. That extended facilities should be provided for the diagnosis of these diseases.
3. That information as to the dangers of venereal diseases should be disseminated, and particulars given to the public as to the facilities provided for free treatment.

The following summarises the work of the treatment centres for the year 1928 :—

A clinic has been established at the Seamen's Dispensary, built and equipped by the Corporation, and where a whole-time medical officer attends. Clinics have also been arranged for at the Royal Infirmary, Northern Hospital, Royal Southern Hospital, and the Stanley Hospital. A Medical Home for women suffering from these diseases has also been established.

There were 4,541 new cases, male and female, admitted to the clinics for treatment, a slight increase on the figure for 1927, and these persons made 116,990 attendances, or 12,409 more than in 1927.

RETURN SHOWING THE NUMBER OF NEW CASES ATTENDING  
THE VENEREAL DISEASES CLINICS DURING THE YEAR 1928.  
ALSO TOTAL ATTENDANCES AND IN-PATIENT DAYS OF OLD AND  
NEW PATIENTS DURING SAME PERIOD.

	Seamen's Dispensary. Males only.	Royal Infirmary. Males and Females.	Royal Southern Hospital. Males and Females.	David Lewis Northern Hospital. Males and Females.	Stanley Hospital. Males and Females.	Edge Lane Medical Home. Females.	TOTAL. Males and Females.
New cases ...	2,043	1,312	482	361	286	57	4,541
<b>Old and new patients</b>							
Total attendances	55,217	29,887	14,857	9,306	7,723	—	116,990
In-patient days	—	25	3,608	—	523	8,540	12,696

The number of cases and attendances at the two main centres has shown a steady increase for some time, the greatest being at the whole-time clinic at the Seamen's Dispensary, opened in 1924. This clinic is entirely devoted to the treatment of persons suffering from venereal diseases. The dispensary work is not confined to seamen, for patients of all classes of occupation attend, the majority, however, are of the seafaring class.

The medical side of the clinic is run by a whole-time medical officer, who is assisted by several orderlies. The value of a clinic of this character, at which treatment is available at all times, has been fully demonstrated.

Evening clinics are now held twice weekly at the Dispensary, and during the year there were 86 new cases and nearly 2,000 attendances. These patients have satisfied the medical officer that they cannot attend at the usual clinic hours.

#### SEAMEN'S DISPENSARY.

The value of a whole-time clinic devoted entirely to the diagnosis and treatment of venereal diseases has again been demonstrated by the

further increase in the attendances at the above Dispensary, as the following table shews :—

	1925	1926	1927	1928
New patients (including Non-Venereal cases) ... ..	1,084	1,360	1,842	2,043
Old and new patients ... ..	1,220	1,055	2,642	2,867
Attendances ... ..	27,265	41,720	49,834	55,217

The classification of the persons suffering from venereal disease and dealt with at the clinic for the first time during the year, and also for the three previous years, was as under :—

	1925	1926	1927	1928
Syphilis ... ..	293	444	459	435
Soft chancre ... ..	148	136	157	131
Gonorrhœa ... ..	636	780	931	1,031
	1,077	1,360	1,547	1,597

The attendances per patient suffering from Gonorrhœa have been much reduced on account of the installation of electrical treatment apparatus, as a shorter time is required for cure and irrigations have been reduced by some 250 weekly. Bed accommodation is available for in-patients at one or two of the general hospitals. During the year 12,696 in-patients days were recorded.

The average general attendances per patient have remained about the usual figure, but the number of those who cease to attend before the patient is on the way to recovery or cure has been established, still remains high.

The cause of these defaults are difficult to analyse, but it is probable that much of it is due to ignorance, indifference or carelessness, or absence or loss of a sense of social responsibility, also in a number of cases to changes of work, illness, absence at sea or distance, causing some inconvenience in attending the centres.

Experience has shown that it is the close personal touch with the patient and the interest in his or her case which helps to stimulate the sufferer to continue treatment. In the majority of these cases, however, the absence of any evidence or feeling of ill-health or discomfort may cause the development of a sense of indifference and the desire to avoid the irksome routine of attendance.

In the case of these diseases, it is eminently desirable that the patient should be seen by a doctor at an early stage and within a few days of the manifestations of the symptoms, and there are few diseases in which this is of more importance both for the patient and for the general public. It is interesting, therefore, to enquire into the percentage of patients applying for medical treatment at different stages of the disease.

Many patients who are suffering from gonorrhœa unfortunately do not report for treatment until a few weeks have elapsed and the disease has extended considerably from the original point of infection, in many cases having complications, and involving important organs. This neglect or inability to seek medical advice may be attributed to nature of employment or absence on ship at sea, but those who reside locally frequently can and do come for treatment at an earlier stage; the disease, however, is well established in the majority before they present themselves for treatment.

With regard to syphilis it is found from figures compiled by Dr. Ross, of the Seamen's Dispensary, that only 25 per cent. of the syphilitic cases attending there appear for treatment in the pre-Wasserman reaction stage, and 24 per cent. appear as early syphilis with primary sore and positive Wasserman test. Those with syphilis in the secondary stage with rash, sore throat, &c., form only 8 per cent. of the total. The important point, however, is that fully 40 per cent. of patients are in the stage of later or latent syphilis, including treated cases of more than two years' duration.

1. Pre-Wasserman stage	...	...	...	...	25%
2. Early syphilis with primary sore or positive Wasserman, but without secondary symptoms					24%
3. Patent syphilis in secondary stage (rash, sore throat, &c.)	...	...	...	...	8%
4. Late syphilis, including treated cases of more than two years' duration	...	...	...	...	40%
5. Neuro-syphilis (disease of the nervous system)	...				3%

It is interesting to observe that the figures for the Seamen's Dispensary show that the number of cases of soft chancre are much higher than the average, being 8·2%, as compared with 4·5% for the city generally.

An analysis of the various types of the total actual venereal disease met with at the principal clinics is as follows:—

	Percentage of total cases of Diagnosed Venereal Disease.				
Syphilis	...	...	...	...	33·5%
Soft chancre	...	...	...	...	4·5%
Gonorrhœa	...	...	...	...	62·0%

The figures for the country as a whole show a ratio of syphilis to gonorrhœa of 1 to 1·9. The figures for Liverpool, therefore, correspond to those for the country generally.

From a history of the sources of infection obtained by Dr. Ross from 3,500 consecutive cases of venereal disease, of which 15% were non-seafaring, coming for treatment to the dispensary, it would appear that prostitutes were responsible for the infection of 3,015, whilst 485 were infected by others. Some of the places where infection occurred and the number infected were as follows:—

					Infected by			
					Cases.	Prostitutes.		Others.
Great Britain	...	...	...	...	1,589	1,119	...	460
Europe	...	...	...	...	594	585	...	9
South America	...	...	...	...	446	445	...	1
West Africa	...	...	...	...	129	128	...	0
United States of America	...	...	...	}	60	60	...	—
West Indies	...	...	...					
Dutch East India	...	...	...					
China	...	...	...					
India	...	...	...	...	38	38	...	—
Japan	...	...	...	...				
Canada	...	...	...	...	35	25	...	10
Australia	...	...	...	...				
and New Zealand	...	...	...	...				

The general opinion is formed that of the various places in the world where infection is prevalent, West Africa and South America, particularly the port of Valparaiso and the Amazon River ports are the most usual places from which infection reaches Liverpool.

SERVICES RENDERED AT THE VENEREAL DISEASES TREATMENT CENTRES  
DURING THE YEAR 1928.

	Syphilis.		Soft Chancere.		Gonorrhœa.		Conditions other than Venereal.		TOTAL.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1. Number of cases which—										
(a) at the beginning of the year under report were under treatment or observation for ... ..	1,362	666	72	...	1,445	465	91	28	2,970	1,159
(b) had been marked off in a previous year as having ceased to attend or as transferred to other Centres, and which returned to the Treatment Centres during the year under report suffering from the same infection ...	74	17	2	...	90	15	...	2	166	34
TOTAL—Items 1 (a) and 1 (b) ...	1,436	683	74	...	1,535	480	91	30	3,136	1,183
2. (a) Number of cases dealt with at the Treatment Centres during the year for the first time ... ..	855	328	155	...	1,906	260	903	134	3,819	722
TOTAL—Items 1 (a), 1 (b) and 2 (a)	2,291	1,011	229	...	3,441	740	994	164	6,955	1,905
2. (b) Number of cases included in Item 2 (a) known to have received previous treatment at other Centres for the same infection ... ..	134	31	5	...	221	16	1	...	361	47
3. Number of cases which ceased to attend—										
(a) before completing the first course of treatment for... ..	411	105	90	...	1,008	107	...	...	1,509	212
(b) after one or more courses but before completion of treatment for ...	375	159	...	...	18	12	...	...	393	171
(c) after completion of treatment, but before final tests as to cure of ...	52	18	25	...	312	20	...	...	389	38

	Syphilis.		Soft Chancre.		Gonorrhœa.		Conditions other than Venereal.		TOTAL.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
4. Number of cases transferred to other Treatment Centres after treatment for ...	115	19	12	...	165	28	...	...	292	47
5. Number of cases discharged after completion of treatment and observation for ...	80	29	56	...	311	55	...	...	447	84
6. Number of cases which, at the end of the year under report, were under treatment or observation for ...	1,258	681	46	...	1,627	518	57	32	2,988	1,231
TOTAL—Items 3, 4, 5 and 6 ...	2,291	1,011	229	...	3,441	740	57	32	6,018	1,783
7. Out-patient attendances—										
(a) For individual attention by the Medical Officer ...	16,746	8,389	700	4	29,935	4,454	2,126	404	49,507	13,251
(b) For intermediate treatment, e.g., irrigation, dressings, etc. ...	990	273	879	...	50,080	1,741	269	...	52,218	2,014
TOTAL ATTENDANCES ...	17,736	8,662	1,579	4	80,015	6,195	2,395	404	101,725	15,265
8. Aggregate number of "In-patient days" of treatment given to persons who were suffering from ...	574	5,419	76	...	804	5,705	64	54	1,518	11,178
For detection of										
For										
Wassermann Reaction.										
...										
4,580										
9. Examinations of Pathological material:—										
(a) Specimens which were examined at, and by the Medical Officer of, the Treatment Centres ...										
(b) Specimens from persons attending at the Treatment Centres which were sent for examination to an approved laboratory ...										

## ALL CLINICS (Except Edge Lane Home).

## NEW CASES.

Year.	Syphilis.		Gonorrhœa.	
	Males.	Females.	Males.	Females.
1925	790	266	1,288	120
1926	921	296	1,564	199
1927	989	329	1,787	193
1928	855	306	1,906	226

## ATTENDANCES.

1925	17,142	6,424	39,659	3,311
1926	18,155	7,067	59,717	3,888
1927	18,417	8,239	69,201	4,430
1928	17,736	8,662	80,016	6,195

## HOSTEL FOR WOMEN.

The arrangements made with the Liverpool Diocesan Association instituted some years ago for the treatment of young women suffering from these diseases have been continued with success during the year. New and enlarged premises have been acquired and the number of beds has been increased to 25.

EDGE LANE HOSPITAL is a home of 25 beds for girls suffering from venereal disease. The total admissions were 57 during 1928.

6 cases of syphilis.

34 cases of gonorrhœa.

16 cases of syphilis and gonorrhœa.

1 not venereal disease for observation.

The patients are all unmarried girls, and are mostly first offenders. Those who are pregnant are treated till their labour is due, when they are transferred to Walton Hospital for confinement, and are re-admitted with their babies after the puerperium. The girls are sent to the Home from the venereal diseases clinics in the town, from doctors, the patrols, the Salvation Army Homes, Homes for

unmarried Mothers, Rescue Homes, prison and the Institutions. They are all young, their ages varying from 14—23, and they are all Liverpool girls. As the beds are always full—sometimes three or four cases are refused during one week—preference is given to girls who have become infected through ignorance or in other ways; the prostitute is only admitted under exceptional circumstances.

The patients who are well enough help in the work of the house—the laundry work, sewing and gardening. Games, dancing, reading and plays are recreations organised by the House Matron. Those who have babies feed them, tend them and sew for them themselves—the result being the children are very healthy. Adoption of the children is not encouraged. On leaving the Home the mothers are found places where they can take their babies, or if this is impossible the children are put in nurseries and the mother pays for their keep. The medical officer attends the hospital weekly and sees and treats all the in-patients and a few out-patients, i.e., discharged former patients. The intermediate treatment is done by the sister-in-charge and nurse.

When fit for discharge each girl is, if possible, found a suitable occupation. This is an extremely difficult matter, and is managed by the sister-in-charge. Of those discharged in 1928:—

Twenty-two undertook various kinds of work, e.g., as hospital or house maids, or went to training homes for domestic servants, and some returned to their homes. Nine were admitted to institutions on account of bad behaviour, mental instability, or theft. Three married, two went to convents, and one died of phthisis, whilst only two returned to their former immoral life.

Eleven were transferred to hospital for their labour and were re-admitted with their babies. The total number of babies in hospital during the year was 19.

That the hospital is regarded as a home is shown by the fact that many of the old girls return regularly to visit the sister. Each Sunday evening on an average 13 of these girls who are working in the neighbourhood appear for supper, and on Christmas Day 22 came to dinner. Many write regularly—some have been in the same situation for two years. This institution is performing a very valuable work in the City.

## EDUCATIONAL PROPAGANDA.

At the inauguration of the venereal diseases scheme the Ministry of Health approved of certain educational work being conducted to acquaint the general public and those likely to come into contact with venereal disease of the dangers arising therefrom, and after several years' effort in Liverpool, this has culminated in the merging of the various Merseyside boroughs into a scheme for this and general health purposes.

Lectures and addresses have been delivered in the districts mentioned by Dr. Hall, the lecturer-organiser of the Committee; he has addressed the public generally, seamen, workmen at industrial concerns, boys' and girls' and other clubs, scout associations, the clergy and others interested. These have been well attended and appreciated.

During the year (March, May, June and November) films on the "Dangers of Ignorance" were shown at several theatres. These displays were preceded by a short discourse on the subject by a medical man; Colonel Burnside, late R.A.M.C., and Dr. A. O. Ross being available for the purpose.

## HOSPITAL ADMINISTRATION.

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During the year 1928 the City Infectious Hospitals and Sanatoria were in full commission.

At the end of the year the amount of hospital accommodation for infectious cases was as follows:—

City Hospital North	...	...	...	...	168 beds.
„ South	...	...	...	...	101 „
„ East ...	...	...	...	...	156 „
„ Fazakerley	...	...	...	...	300 „
„ Fazakerley Annexe...	...	...	...	...	160 „
„ Sparrow Hall	...	...	...	...	130 „
Fazakerley Sanatorium	...	...	...	...	264 „
Broadgreen Sanatorium	...	...	...	...	336 „
					1,615 „

At the City Hospital, Fazakerley, 72 beds are set aside for the treatment of tuberculous patients, in addition to the beds at the Fazakerley Sanatorium.

During the year the beds in the city hospitals were well occupied, requests being received for the admission of a great many cases of measles, whooping cough, chickenpox and other ailments of children. Many of these patients were removed from houses which were sub-let and contained several families. The city hospitals have proved of great benefit during the housing difficulties, when many families are found to be occupying one or two rooms, and effectual isolation of a case of infectious sickness is practically impossible.

At the request of the Health Committee a few beds were set aside at the Fazakerley Hospital for the treatment of infants suffering from diarrhoea during the summer months. This practice has been followed in previous years, and has in the past been found of great value in dealing with cases of infantile diarrhoea in some of the most congested districts in the city. The number of cases admitted was 7.

Beds were provided during the year for patients suffering from the following diseases, viz. :—Scarlet fever, diphtheria, measles, whooping cough, enteric fever, erysipelas, cerebro-spinal fever, encephalitis lethargica, anthrax, influenzal pneumonia and chickenpox.

The value of the hospitals, and the immense amount of useful work performed, is shown by the fact that no less than 7,057 patients were treated within their walls during the year.

The Hospitals Committee have agreed with various Local Authorities to receive cases of infectious disease from districts beyond the City boundary, namely, Sefton Rural District, Waterloo and Seaforth, Great Crosby, Little Crosby, Leasowe Hospital, and the Children's Convalescent Home, West Kirby.

Arrangements have also been made to deal with any case of cholera, yellow fever, or plague, which may arise in any of the neighbouring Urban or Rural Districts. A suitable charge is made in each case.

#### OUTSIDE AREAS AND SMALLPOX.

The question of smallpox cases in neighbouring areas was specially considered by the Port Sanitary and Hospitals Committee in April and May. Arrangements had been in force for some years with several of the local authorities in the district that any cases of smallpox occurring in their areas should be accommodated in Liverpool hospitals.

It has always been recognised that the presence of smallpox in areas adjoining or close to Liverpool is a matter in which the city is vitally interested, as an outbreak of this disease, unless promptly dealt with, might result in the spread of the infection to the Liverpool area, and also do considerable harm to the trading interests of the city and port.

The Committee eventually decided to invite all the adjoining local authorities to enter into an agreement to pay a retaining fee each year towards the upkeep of a smallpox hospital, the payment to be based on census population. A further charge would be made for the maintenance of each patient sent into the hospital for treatment. Most of the neighbouring authorities willingly accepted this arrangement and entered into a formal agreement with the Liverpool Corporation for the isolation and treatment of cases of smallpox occurring in their areas.

## THE HOSPITAL SERVICE.

### FAZAKERLEY HOSPITALS AND SANATORIUM.

#### REPORT OF THE MEDICAL SUPERINTENDENT.

During the year ending 31st December, 1928, 3,433 patients were admitted to the Fazakerley Hospitals (excluding the Fazakerley Sanatorium), an increase of 76 as compared with the year 1927. The number of cases under treatment reached a maximum of 455 on 21st June, an increase of 5 on the highest figure for the previous year. The number of admissions to individual hospitals was as follows:—

Fazakerley Isolation Hospital.	Fazakerley Annexe Hospital.	Sparrow Hall Hospital.	Total.
2,004	919	510	3,433

The number of patients classified under the heading "Other diseases" has again been considerable, and the resources of the hospital for this type of case have been very fully utilised.

#### IMMUNISATION OF NURSING STAFF.

The successful results which have been obtained by the immunisation of nurses against scarlet fever were referred to in a previous report. This practice has again been amply justified in the year under review. In one instance only has scarlet fever supervened in an immunised member of the staff, and in this case the character of the attack was sufficiently mild to make a definite diagnosis difficult.

The incidence of diphtheria amongst the nursing staff, in previous years inconsiderable, has shewn a recent tendency to increase, three nurses having developed this disease during 1928. In consequence the practice of staff immunisation has also been put into operation in the prevention of this disease.

#### ANTHRAX.

The striking results which have been obtained in the treatment of this disease have attracted some attention. Thirty-three cases of anthrax have in recent years been admitted to the City Hospital. Of these 31 recovered, the two fatal cases being admitted late in their attack, at a stage beyond treatment, and dying within a few hours. All cases were given serum, and with few exceptions, by the intravenous route. It is noteworthy that excision of the "malignant pustule" was not resorted to in any of these cases, recovery taking place as the result of serum injections only, without operative interference.

Anti-anthrax serum has also been employed empirically as a prophylactic in persons known to have been exposed to anthrax infection. No case of the disease occurred amongst those so infected, but the numbers are not sufficient to justify any conclusion as to the efficacy of this procedure.

## CUTANEOUS ANTHRAX.

A SERIES OF CASES TREATED AT THE CITY HOSPITAL, FAZAKERLEY, DURING THE PAST FIVE YEARS, WITH ANTI-ANTHRAX SERUM, WITHOUT RECOURSE TO SURGICAL EXCISION OF THE LOCAL LESION.

No.	Age and Sex	Occupation	Days ill on Admission	Site of Lesion	Clinical Notes.	Total Amount of Serum Injected	Result
1	42 F.	Domestic duties ...	5	Left cheek ...	Induration marked ...	400	Recovered
2	40 M.	Tannery hand ...	5	L. forearm ...	Severe ...	360	Recovered
3	20 F.	Hair Machinist ...	3	L. upper arm	Mild ...	80	Recovered
4	40 M.	Dock labourer (wool sheds).	2	Angle of jaw...	Neck much swollen...	220	Recovered
5	22 M.	Dock labourer ...	5	Back of neck	—	645	Recovered
6	49 M.	Butcher's slaughterer.	4	R. forearm ...	Two "pustules" ...	840	Recovered
7	23 M.	Bone fertiliser works hand.	4	Lower lip ...	Much swelling of sublingual tissues.	360	Recovered
8	49 M.	Porter in tinned goods store.	4	Neck, behind ear.	Extensive induration	370	Recovered
9	22 M.	Tannery hand ...	3	Back of neck.	—	270	Recovered
10	34 F.	Wool operative ...	3	L. cheek ...	—	180	Recovered
11	28 M.	Dock labourer ...	2	Below angle of jaw.	Induration in anterior triangle of neck.	360	Recovered
12	30 M.	Dock labourer ...	6	Back of neck	Oedema to middle line in front. Profoundly toxæmic when admitted.	130	Died hours after admission to hospital.
13	26 M.	Tannery hand ...	3	Back of neck.	—	270	Recovered
14	24 M.	Tannery hand ...	2	Left cheek ...	Early, mild ...	180	Recovered
15	45 M.	Tannery engineer	2	Back of neck	—	210	Recovered
16	39 F.	Wool operative ...	3	Right cheek ...	Much induration. Two "pustules."	410	Recovered
17	18 M.	Tannery hand ...	4	Left cheek ...	—	295	Recovered
18	20 M.	Dock labourer ...	5	Side of neck....	Induration marked....	330	Recovered
19	19 M.	Tannery hand ...	2	Left cheek ...	—	260	Recovered
20	18 F.	Wool operative ...	1	Left great toe.	Unusual site ...	180	Recovered

Age and Sex	Occupation.	Days ill on Admission	Site of Lesion	Clinical Notes	Total Amount of Serum Injected	Result
4 F.	Wool operative ...	3	Side of neck....	—	270	Recovery.
0 M.	Dock labourer ...	1	Left wrist ...	—	90	Recovery.
2 M.	Mechanic in wool disinfecting station.	3	Back of neck.	Progressively worse until after third dose of serum.	510	Recovery.
9 M.	Tannery hand ...	3	Left forearm	—	240	Recovery.
1 M.	Wool sampler ...	4	Left forearm.	Moderately toxic ...	210	Recovery.
1 M.	Dock labourer ...	3	Right wrist ...	—	270	Recovery.
0 M.	Dock labourer ...	7	Neck, middle line.	Moribund on admission.	180	Died 4 hours after admission to Hospital.
4 M.	Dock carter ...	4	Left cheek ...	Swelling quickly tending downwards.	320	Recovery.
9 F.	Wool packer. ...	4	Right upper arm.	Marked induration from axilla to wrist.	450	Recovery.
1 M.	Cotton porter (Docks).	5	Right cheek and lower eyelid.	Severe toxæmia ...	600	Recovery.
3 M.	Tannery hand ...	4	Right gluteal fold.	Unusual site of infection.	330	Recovery.
0 M.	Tannery hand ...	3	Right upper and lower eyelids.	—	270	Recovery.
3 M.	Tannery hand ...	4	Right side of neck near mid-line.	Extensive oedema, including glottis. Severe toxæmia.	180	Died 17 hours after admission to Hospital.
6 M.	Dock labourer ...	4	Right side of neck.	Oedema extensive ...	1,100	Recovery.

*Case No. 32 had his earlier Serum given at another Hospital.*

REMOVAL OF TONSILS AND ADENOIDS.

The hospital has been visited as required by a throat, nose and ear specialist during the year. The operation for the removal of tonsils and adenoids has been performed upon 104 patients, comprised as follows :—Scarlet fever, 51; diphtheria, 19; tuberculosis, 13; measles, 6; whooping cough, 3; chickenpox, 2; mumps, 2; pneumonia, 1; other diseases, 7.

The results of this operation have been uniformly favourable, and there is little doubt that the beneficial effects of this measure will be seen in an improvement in the general health of the patients, a lessened incidence of complications and, in many instances, a shortened stay in hospital. The services of this specialist have been generally utilised for consultative and operative work in connection with the nose, ear, and throat, both in tuberculosis and in the infectious diseases.

TUBERCULOSIS.

X-RAY DEPARTMENT.

During 1928, 726 screen examinations have been made, and 639 films taken. The increased amount of work in this department has made necessary the appointment of a whole-time Radiologist, who will also operate the X-ray apparatus recently installed at Broadgreen Sanatorium.

The following summary indicates the regions of the body comprised by the films taken :—

Thorax	...	...	...	333	Gall bladder	...	...	2
Spine	...	...	...	124	Stomach	...	...	1
Pelvis	...	...	...	21	Intestine	...	...	1
Hip	...	...	...	14	Elbow	...	...	25
Knee	...	...	...	33	Sacro-iliac joint...	...	...	8
Shoulder	...	...	...	4	Skull	...	...	7
Ankle	...	...	...	16	Renal tract	...	...	2
Kidneys	...	...	...	4	Miscellaneous	...	...	44

## ARTIFICIAL LIGHT TREATMENT.

The beneficial results of light treatment in selected cases and under careful medical supervision have been further confirmed by the experience of the past year. The following summary of the work of this department of the Sanatorium was submitted to the Ministry of Health early in the year, and refers to cases treated during the previous six months :—

The personnel and equipment of the light department have undergone no change or modification during the last twelve months.

Details of the cases dealt with are shewn below, and it will be observed that these are grouped under two headings, (1) Carbon Arc (general application), and (2) Tungsten Arc (local).

## CARBON ARC.

Patients treated :—

Pulmonary tuberculosis with tuberculosis of other organs :—

(a) Lungs and lymphatic glands	...	...	...	3
(b) Lungs and peritoneum	...	...	...	2

Non-pulmonary tuberculosis :—

(a) Glands	...	...	...	...	...	3
(b) Peritoneum	...	...	...	...	...	3
(c) Joints	...	...	...	...	...	3
(d) Bones	...	...	...	...	...	1
(e) Skin (lymphangitis)	...	...	...	...	...	1

Non-tuberculous :—

Abdominal abscess	...	...	...	...	...	1
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Result of treatment :—Pulmonary tuberculosis only, 37 cases treated, 3 of these have been discharged improved. All cases were sputum negative and included two adults. Of the 34 cases remaining in hospital 33 show improvement.

Pulmonary tuberculosis with tuberculosis of other organs :—Five cases treated. One case has been discharged improved, namely, a sputum positive case with abdominal tuberculosis. Of the four cases still in hospital three are improving.

Non-pulmonary :—Eleven cases still in hospital, all show improvement.

Non-tuberculous :—One case treated, discharged healed.

## TUNGSTEN ARC.

Patients suffering from tuberculosis treated during half-year:—

Scrofuloderma and lungs	...	...	...	...	2
Joints	...	...	...	...	3
Bones	...	...	...	...	3
Lymphatic glands and lungs	...	...	...	...	1
Genito-urinary	...	...	...	...	1
Scrofuloderma	...	...	...	...	1
Lymphatic glands	...	...	...	...	1

Result of treatment:—All the above cases are still in hospital and show improvement, with the exception of two sputum positive cases associated respectively with disease of the skin and lymphatic glands.

The number of cases treated is less than that of previous reports, the apparatus having been dismantled for certain renewals and repairs during the course of the year.

The Medical Superintendent and his colleagues have had the effects produced on individual patients very closely under observation, and many occasions for mutual observation and discussion have arisen. The opinions arrived at do not differ from those expressed in the report made to the Ministry of Health in June last. Pulmonary cases with positive sputum have been generally excluded from treatment, previous experience has demonstrated the definitely injurious effect which light treatment is likely to produce in such cases. The favourable results, on the other hand, obtained in cases of open sinus, abdominal disease and skin infection have been corroborated. The favourable influence of sanatorium treatment in itself as a factor in such cases has not been lost sight of, but members of the medical staff who have had experience before and since the introduction of light therapy are convinced of its usefulness in the types of cases referred to.

In the case of children views previously expressed as to the mental and physical stimulus produced have been further confirmed, and light treatment has become general in this group in the absence of positive sputum.

Pulse temperature, blood pressure and blood-cell observations have not differed from those previously reported upon.

## DENTAL WORK.

The visiting Dental Surgeon has carried out the following work during the year :—

Fillings	...	...	...	...	...	...	61
Extractions with local anæsthetic	...	...	...	...	...	...	255
Extractions with gas	...	...	...	...	...	...	5
Extractions without an anæsthetic	...	...	...	...	...	...	1
Scalings and miscellaneous operations	...	...	...	...	...	...	124

## SANATORIUM SCHOOL.

The average daily number of children receiving instruction in the School attached to the Sanatorium for the year is 62, comprised as follows :—

Pulmonary cases with negative sputum	...	...	...	44
Pulmonary cases with positive sputum	...	...	...	16
Non-pulmonary cases	...	...	...	2

The routine treatment of these cases has not differed materially from that indicated in previous reports, with the exception that routine examination by a nose, throat and ear surgeon, with operation where necessary, has been established as a regular practice. In addition, the services of a visiting dental surgeon have been made generally available.

The head teacher makes the following report :—

The number of scholars who have received lessons (in both wards and schoolroom) is 89. Thirty-seven have been discharged and one deceased, leaving 51 scholars at present on roll. Instruction is given in the open air whenever possible, and is closely correlated with the child's natural interests and activities. Nature study finds an important place in the school curriculum, and each scholar cultivates his, or her, portion of the school garden. Organised games are played out of doors, except in inclement weather. Two educational visits have been paid to the Walker Art Gallery and the Museum in Liverpool during the year. Reading, writing, spelling, and arithmetic are taught largely through the handiwork, and in conjunction with the reading of the daily newspaper. It is pleasing to record that a woman patient of 25 years, who could not read and wished to learn, was able to enjoy reading a simple

book and write a letter by the time she was discharged. In addition to cookery, sewing, leathercraft, and raffia work, the senior scholars have commenced cane-work. This latter craft has been introduced to many of the women patients in the Sanatorium, so that they may occupy pleasantly much of their leisure time in making useful articles, e.g., bordering of trays, waste paper baskets, etc.

Two performances of the operetta "Snow-White and the Seven Dwarfs" were given early in December by the school children, for the entertainment of the other patients and the staff of the Sanatorium.

#### REPORT OF MR. JOHN T. MORRISON, CONSULTING SURGEON.

Statistics are given of 51 tuberculous patients discharged during the past year. It will be noticed that results have been particularly encouraging during 1928.

It is hoped that before long it will be possible to obtain additional accommodation so as to ensure that the most suitable types of cases are concentrated at Fazakerley. Many of the less severe cases, as well as those of a particularly chronic character, could be adequately treated in an institution with less specialised staff and equipment and with corresponding economy.

In view of the unfortunate interpretation given in the public press to certain reports of the Medical Research Council, it may be well to state that the ultra-violet light treatment in use at Fazakerley is an adjunct to the other methods referred to by the Medical Research Council. The medical staff, who have had the opportunity of watching the progress of patients, both before and after the adoption of this radiation method of treatment, are of opinion—although accurate scientific data are in the nature of the case difficult to quote—that the light treatment is of very definite value. With this opinion I fully concur. I think the excellent results during the past year are not without a bearing on this subject.

## TREATMENT RESULTS.

Part affected. with Tuberculosis.	Number of cases.	Average stay in hospital in months.	RESULTS.			
			Quiescent.	Improved.	Not improved.	Died.
NON-PULMONARY — DISEASE ONLY						
Bones and joints ...	23	21·6	17	3	2	1
Abdomen ...	7	10	6	—	—	1
Lymphatic glands ...	4	7·75	1	3	—	—
Genito-urinary ...	1	2	—	—	1	—
Miscellaneous ...	2	13·5	2	—	—	—
TOTAL ...	37		82%			
PULMONARY — DISEASE IN ADDITION TO						
Bones and joints ...	8	23·1	2	1	3	2
Abdomen ...	2	19·5	2	—	—	—
Lymphatic glands ...	4	12·5	2	1	1	—
Genito-urinary ...	—	—	—	—	—	—
Miscellaneous ...	—	—	—	—	—	—
TOTAL ...	14		57%			

## BROADGREEN SANATORIUM.

(Late Highfield Sanatorium.)

## REPORT OF THE MEDICAL SUPERINTENDENT.

The admissions, arranged according to age periods, were as follows :

Ages.	5-10	10-20	20-30	30-40	40-50	50 or over	Totals.
Male ...	8	48	49	77	72	79	333
Female ...	11	57	87	42	32	21	250
Totals ...	19	105	136	119	104	100	583

OCCUPATIONAL TREATMENT.—There can be no doubt that mental occupation in one form or another is a valuable adjunct to the treatment of patients in Sanatoria. Provision for this is made in prescribing, under medical supervision, for those who are fit, suitable forms of work graduated according to the patient's condition, due regard being paid in each case to the type of work which is likely to interest the patient.

Many patients take an interest in gardening and the maintenance of the grounds generally: others in carpentry including poultry-house and appliance making; others again in the care of the poultry. In addition, patients are encouraged to develop hobbies such as wood-carving and other forms of hand-work.

Organised recreation, too, is of considerable assistance in providing mental occupation, the management and supervision of such games as bowls, golf putting, billiards, etc., being undertaken by a Recreation Committee consisting of patients.

SPECIAL FORMS OF TREATMENT, such as artificial pneumothorax and injections of gold salts have proved of value in selected cases.

X-RAY APPARATUS.—The installation of an X-Ray apparatus has proved of great service as an aid to diagnosis and to determining the presence or otherwise of activity of disease, and also as an aid to ascertaining the effects of special forms of treatment.

SCHOOL.—What has been said of the beneficial effects of mental occupation applies very markedly to the work of the Sanatorium School, and it is obvious that the school has an important bearing on the rate of progress of the child towards health. Educationally, too, the school is of decided service. As has previously been noted, backward children often respond in a remarkable way to the curriculum specially adapted to their physical and mental condition. In addition, the child, who before admission has not lost ground educationally, is enabled to maintain his or her position on discharge from Sanatorium after a possibly protracted course of treatment. In this connection it may be mentioned that some of the older children have been successful in obtaining satisfactory posts after discharge from Sanatorium.

As regards special subjects, handwork has been further developed; and, in gardening, the cultivation of individual plots of ground has proved a satisfactory method of maintaining the interest of the child, and of stimulating an interest in nature study.

As hitherto, a good deal of needlework and knitting has been undertaken by the girls. The senior girls have again made the school dresses.

DENTAL TREATMENT has been practically confined to the removal of carious teeth and the remedying of septic conditions, the presence of which have an undoubtedly injurious effect on the health and on the course of the treatment of the patient. The number of extractions amounted to 189; and other miscellaneous operations, such as scaling, etc., totalled 11.

The following tables, prepared by the Medical Staff of each of the City Hospitals show the number of patients admitted, the nature of the illness in each case and the results of treatment at each of the eight hospitals during the year 1928:—

CITY HOSPITAL NORTH, NETHERFIELD ROAD.

*Visiting Physician, Dr. R. I. RICHARDSON.*

*Resident Physician, Dr. F. R. O'SHIEL.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment during the year.	Transferred to Convalescent Hospital	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.	77	845	—	922	—	3	816	100	2	3	0·4
Enteric Fever.	—	—	—	—	—	—	—	—	—	—	—
Diphtheria ...	—	1	—	1	—	—	1	—	—	—	—
Measles ...	—	10	—	10	—	—	4	4	1	2	20·0
Whooping Cough ...	—	2	—	2	—	—	1	1	—	—	—
Other Diseases	1	21	—	22	—	1	19	1	—	1	0·5
Isolation and Observation Cases ...	—	15	—	15	—	—	9	6	—	—	—
Totals ...	78	894	—	972	—	4	850	112	3	6	0·67

CITY HOSPITAL SOUTH, GRAFTON STREET.

*Visiting Physician, Dr. H. A. CLARKE.*

*Resident Physician, Dr. RITA HENRY.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Enteric Fever... ..	—	—	—	—	—	—	—	—	—	—	—
Scarlet Fever.....	51	402	—	453	—	56	328	63	—	6	1.4
Diphtheria .....	—	2	—	2	—	—	2	—	—	—	—
Measles .....	2	275	—	277	—	—	239	21	1	1	6.1
Other Diseases.....	4	59	—	63	—	1	60	—	1	2	3.3
Isolation & Obser- vation Cases .....	5	19	—	24	—	—	16	8	—	—	—
Totals .....	62	757	—	819	—	57	645	92	2	25	3.3

## FAZAKERLEY SANATORIUM.

*Medical Superintendent, Dr. C. RUNDLE*

*Principal Resident Medical Officer, Dr. W. CRANE.*

*Assistant Resident Medical Officers, Drs. B. J. ELLIOTT and  
S. GAWNE.*

*Radiologist, Dr. A. E. CONNOLLY.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals	Total under Treatment during the year.	Transferred to Convalescent Hospital	Transferred to other City Hospitals	Discharged.	Remaining at end of year	Died within 48 hours of Admission	Total Deaths
Tuberculosis .....	327	416	—	743	—	—	350	326	—	67
Isolation and Observation Cases ...	2	5	—	7	—	—	4	3	—	—
	329	421	—	750	—	—	354	329	—	67

## CITY HOSPITAL, FAZAKERLEY ANNEXE.

*Medical Superintendent, Dr. C. RUNDLE.*

*Assistant Resident Medical Officer, Dr. ELSIE BURNS.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment dur- ing the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.....	47	351	35	433	—	54	346	28	—	5	1.4
Enteric Fever .....	2	9	—	11	—	—	11	—	—	—	—
Diphtheria .....	24	226	2	252	—	7	218	17	2	10	4.4
Measles .....	—	119	2	121	—	17	65	30	—	9	7.5
Whooping Cough ...	—	3	—	3	—	1	2	—	—	—	—
Other Diseases.....	13	210	12	235	—	3	199	26	1	7	3.3
Isolation and Observation Cases	—	1	—	1	—	—	1	—	—	—	—
Totals .....	86	919	51	1056	—	82	842	101	3	31	3.3

## CITY HOSPITAL, FAZAKERLEY.

*Medical Superintendent, DR. C. RUNDLE.*

*Principal Resident Medical Officer, DR. A. E. HODGSON.*

*Assistant Resident Medical Officers, DRS. C. ABERNETHY and L. DENIL.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment dur- ing the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever .	13	191	51	255	—	18	296	28	—	3	1.5
Enteric Fever	2	21	1	24	—	—	23	1	—	—	—
Paratyphoid Fever .....	6	9	—	15	—	—	14	—	—	1	11.1
Diphtheria.....	24	328	5	357	—	2	268	72	7	15	4.5
Smallpox .....	—	—	—	—	—	—	—	—	—	—	—
Measles .....	—	387	16	403	—	45	304	27	4	27	7.2
Whooping Cough.....	57	206	1	264	—	5	219	—	6	40	19.4
Phthisis .....	—	—	—	—	—	—	—	—	—	—	—
Other Diseases.	86	739	27	852	—	63	670	75	10	44	6.0
Isolation and Observation Cases.....	2	22	—	24	—	—	21	3	—	—	—
Totals.....	190	1903	101	2194	—	133	1725	206	27	130	6.7

# CITY HOSPITAL EAST, MILL LANE, OLD SWAN.

*Visiting Physician, DR. H. A. CLARKE.*

*Resident Medical Officer, DR. F. WEIGHTMAN.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treat- ment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.....	1	32	—	33	—	14	16	3	—	—	—
Enteric Fever .....	—	—	—	—	—	—	—	—	—	—	—
Diphtheria.....	109	1273	—	1382	—	—	1182	146	26	54	4·2
Measles .....	—	—	—	—	—	—	—	—	—	—	—
Other Diseases .....	—	43	—	43	—	—	31	2	7	10	23·3
Isolation and Obser- vation Cases ...	—	46	—	46	—	—	43	3	—	—	—
Totals.....	110	1394	—	1504	—	14	1272	154	33	64	4·6

## CITY HOSPITAL, SPARROW HALL.

*Medical Superintendent, DR. C. RUNDLE.*

DISEASES.	Remaining Dec. 31st, 1927.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of admission.	Total Deaths.	Total Mortality per cent of Admissions
Scarlet Fever.....	—	105	66	171	—	27	110	33	—	1	0.9
Smallpox .....	—	—	—	—	—	—	—	—	—	—	—
Whooping Cough...	—	1	6	7	—	—	7	—	—	—	—
Diphtheria. ....	18	12	10	40	—	3	32	5	—	—	—
Measles .....	—	37	49	86	—	2	84	—	—	—	—
Other Diseases .....	15	168	51	234	—	7	206	21	—	—	—
Isolation and Observation Cases	1	5	—	6	—	—	6	—	—	—	—
Totals .....	34	328	182	544	—	39	445	59	—	1	0.3

## BROADGREEN SANATORIUM.

*Medical Superintendent, DR. H. R. MACINTYRE.*

*Senior Resident Medical Officer, DR. O. F. THOMAS.*

<i>Assistant</i>	<i>do</i>	<i>do.</i>	Dr. MARGT. FERRIER.
<i>do.</i>	<i>do</i>	<i>do.</i>	Dr. EDWARD MILES.
<i>do.</i>	<i>do.</i>	<i>do.</i>	Dr. R. ELDRIDGE.

DISEASE.	Remaining 31st Dec., 1927.	Admitted during the year.	Total under Treatment during the year.	Transferred to Convalescent Hospital	Transferred to other Sanatoria.	Discharged.	Remaining at end of year	Died within 48 hours of Admission	Total Deaths
Phthisis.....	314	583	897	—	—	424	321	5	152

## SANITARY ADMINISTRATION.

---

For the purpose of carrying out the requirements of the various Sanitary Acts of Parliament and the Orders, Bye-laws and Regulations made thereunder, the following staff of the Medical Officer of Health's Department has been employed during the year.

	Males	Females
*Chief sanitary inspector ... ..	1	—
*Deputy chief sanitary inspector ... ..	1	—
*Prosecuting sanitary inspectors ... ..	10	—
*District sanitary inspectors ... ..	34	—
*Notice servers ... ..	3	—
<sup>1</sup> Food inspectors ... ..	9	—
*Inspectors under the Food and Drugs, etc., Acts ...	3	1
* „ of cowsheds and milkshops ... ..	2	—
* „ under the Shops Acts ... ..	2	1
* „ „ Factories and Workshops Acts ...	4	—
(These inspectors are also appointed under the Shops Acts.)		
<sup>2</sup> Smoke inspectors ... ..	3	—
<sup>3</sup> Inspectors of Common Lodging Houses and Houses let in Lodgings ... ..	16	—
*Inspectors of Canal boats ... ..	1	—
<sup>3</sup> Ambulance and disinfecting superintendents and inspectors ... ..	13	—
Motor ambulance drivers ... ..	7	—
Rat catchers, &c. ... ..	11	—
Men engaged stripping walls and spraying infected houses, limewashing middensteads, etc. ...	21	—
Chief clerk ... ..	1	—
Clerical staff (Permanent) ... ..	32	—
„ „ (Temporary) ... ..	1	2
„ „ (Health visitors, etc.) ... ..	—	7
„ „ (Tuberculosis branch) ... ..	3	10
<sup>4</sup> Health visitors, School nurses, etc. (permanent) ...	—	73
<sup>4</sup> „ „ „ „ (temporary) ... ..	—	14
<sup>5</sup> Inspectors under the Midwives Act ... ..	—	3

	Males	Females
<sup>6</sup> Ophthalmia Neonatorum nurses ... ..	—	2
Superintendent, Health Visitors and Assistants at		
Infant Milk Centres (permanent) ... ..	1	12
Temporary assistants and cleaners at Infant Milk		
Centres ... ..	3	29
<sup>7</sup> Nurses at Tuberculosis Institutes ... ..	—	7
Caretakers at Tuberculosis Institutes ... ..	2	—
,, Ford Street Mortuary ... ..	—	1
,, City Laboratories ... ..	1	—
Cleaners at City Laboratories ... ..	—	6
Staff at Seamen's Dispensary... ..	4	1
Women engaged cleansing verminous children ... ..	—	3
<i>Day Nurseries, Maternity Home and Clinics.</i>		
Matrons ... ..	—	8
Deputy-matrons ... ..	—	8
Nurses and probationers ... ..	—	50
Domestic staff (including gardeners and cleaners)... ..	3	57
Seamstresses ... ..	—	3
<hr/>		
Total number of staff ... ..	192	298
<hr/>		

In every case officers are selected for these positions whose previous training and occupation have been such as to fit them for the special duties they are called upon to discharge. Those marked \* are required to hold a certificate affording evidence of adequate sanitary instruction. <sup>1</sup> Have special training in each branch of the work, *i.e.*, Butchers, Fishmongers, Fruiterers, &c., are also certificated. <sup>2</sup> Hold Marine Engineer's First Class Certificates. <sup>3</sup> All hold the certificate of the Liverpool University School of Hygiene, the Royal Sanitary Institute or an equivalent thereto. <sup>4</sup> Fully-trained and Certificated Nurses or other special qualifications. <sup>5</sup> Registered Midwives with special qualifying certificates. <sup>6</sup> Fully-trained Nurses with special training in Ophthalmia Neonatorum. <sup>7</sup> Fully-trained Nurses. The additional certificates usually held by the Health Visitors' Staff, in addition to the certificate of training as a nurse are those of the Central Midwives' Board, the Liverpool University School of Hygiene, the Royal Sanitary Institute, and, or, the Sanitary Inspectors' Examination Board.

## COMPLAINTS OF NUISANCES.

The district sanitary inspector visits at the earliest possible moment all premises where a nuisance is complained of, and on his report an informal notice is served upon the person responsible for the nuisance. If the informal notice is not complied with the matter is referred to the prosecuting inspector, upon whom is placed the responsibility of seeing that the nuisance is abated.

The number of occasions upon which the advice and assistance of the Health Department have been sought has increased during the year. These applications fluctuate year by year; in 1910 they were 9,354; in 1920, 18,730; in 1925, 19,075; in 1926, 20,514; in 1927, 20,811, and in 1928, 22,652. As in former years, complaint in many cases was made to the department only after repeated requests addressed to the persons causing or allowing the nuisance, or to the owners or agents of property, had been ignored. A great deal of the time of the inspectors was taken up by these special examinations.

Requests to examine important public buildings and offices, as well as highly rented dwelling-houses, are numerous, and the application of the smoke test has in many cases brought to light defects in the drainage system.

Last year 30,762 nuisances were discovered as the result of complaints. Preliminary notices were served either on the owners or occupiers to remedy 26,239 nuisances. The remaining 4,523 nuisances came within the province of other departments, and were referred to those departments to be dealt with.

## HOUSE-TO-HOUSE INSPECTION.

One of the most important duties placed upon Sanitary Authorities is that of house-to-house inspection. The Public Health Act provides that this should be done systematically, and the importance of the work is indicated by the extent to which house-to-house inspection is done within the city.

The value of the work is also recognised by owners of property who prefer that they should receive all notices at the same time, thus avoiding the unnecessary expenditure which would result if the notices were served at different periods.

In the course of house-to-house inspection 64,260 nuisances were discovered, to remedy which preliminary notices were served on either the owner or the occupier. A number of defects were also referred to other departments.

On re-inspection, the number of nuisances found not abated was 24,631, and statutory notices were served to remedy them. These were again re-inspected by the district inspectors, and those found not abated were referred to the prosecuting inspectors for further action.

The number of nuisances found by the district sanitary inspectors is shown in the following table, along with the character of the proceedings taken by the prosecuting sanitary inspectors to abate the nuisances, with the results :—

Number of complaints made by inhabitants...	...	...	22,652
„ nuisances discovered on above complaints	...	...	30,762
„ „ „ on house-to-house inspection	...	...	64,260
Total nuisances...			95,022
„ visits by district sanitary inspectors to re-inspect above nuisances	...	...	56,295
„ notices issued (owners)	...	...	68,134
„ „ (occupiers)	...	...	245
Total notices			68,379
„ visits to premises under observation	...	...	10,237
„ incidental calls	...	...	31,582
„ visits made by prosecuting inspectors to re-inspect nuisances	...	...	80,473
„ notes sent to comply with notices	...	...	6,011
„ informations laid	...	...	427
„ magistrates' orders	...	...	223
„ fined	...	...	22
„ acquitted or withdrawn	...	...	182

All nuisances were subsequently found abated.

For visitations in house to house inspection see page 180.

## OFFENSIVE TRADES.

The following offensive trades are carried on in the city : Bone boilers, Dripping factories, Fat and tallow melters, Fellmongers, Fertilizer works, Fish oil works, Gut scrapers, Ham cooking and potted meat works, Hide and skin works, Lard refiners, Liver boilers, Paint and resin works, Palm oil works, Soap boilers, Tanneries, Tar and naphtha works, Tripe boilers, and Resin works.

When permission is granted to carry on an offensive trade, conditions are imposed requiring that the premises be put in order to the satisfaction of the City Engineer, Building Surveyor and Medical Officer of Health, that no public or private nuisances be caused, and that the business be discontinued whenever the Council shall so require.

The number of inspections of premises where offensive trades are carried on was 1,126.

## FACTORY AND WORKSHOP ACT, 1901.

## FATORIES, WORKSHOPS, AND WORKPLACES.

All factories, workshops and workplaces are systematically visited by four inspectors appointed under the Act, the various premises being grouped in districts so as to secure the maximum number of visits in the minimum time.

Total number of Factories	...	...	...	...	2,421
„ Workshops	...	...	...	...	3,531
„ Workplaces	...	...	...	...	355
„ visits to Factories (including Factory Bakehouses)	...	...	...	...	5,644
„ visits to Workshops (excluding Workshop Bakehouses)	...	...	...	...	7,237

## BAKEHOUSES.

During the past 28 years there has been a gradual but marked decline in the use of underground bakehouses, and since the passing of the Factory and Workshop Act, 1901, 326 underground bakehouses have been closed.

Many causes have led to the closing of underground bakehouses, but the main cause has been due to the retirement of the small master baker, the merging of smaller businesses into larger firms, business competition of larger firms, and the centralisation of baking in well equipped up-to-date factories, provided with modern baking appliances. In a few instances, bakehouses have been closed owing to the premises having been acquired and used for other purposes.

During the year 4,090 visits were paid to bakehouses.

Number of bakehouses on register, 31st December ...	...	583
„ special visits to bakehouses on complaints ...	...	45
„ ordinary visits to bakehouses ...	...	3,927
„ re-inspections of incorrect premises ...	...	118
Total visits ...		4,090

Number of occasions on which bakehouses were found					
incorrect ...	...	...	...	...	127
„ sanitary defects found ...	...	...	...	...	147
„ notices issued ...	...	...	...	...	122

The above notices were complied with by the owners or occupiers.

#### HOMEWORK.

In accordance with the provisions of the Act, outworkers returns are received twice yearly, and the premises referred to in the returns are visited by the district sanitary staff to ascertain (a) that the sanitary condition of the premises is satisfactory, and (b) to ascertain if the premises are used as “workshop” or “domestic workshop.” The following statement shows the work undertaken during the year, viz. :—

Number of outworkers' returns received ...	...	314
„ visits to premises ...	...	224
„ premises incorrect ...	...	Nil.

#### RESTAURANT KITCHENS.

All kitchens in connection with cafés and restaurants are systematically visited, particular attention being paid to the cleanliness of the premises and of the workers employed in the kitchen.

Total number of visits during the year ...	...	1,211
Number found incorrect ...	...	69

## INSPECTION OF STABLES AND REMOVAL OF MANURE.

Stables within the city are systematically visited by two inspectors, a great portion of whose time is devoted to the work, constant attention being paid to the frequent removal of the manure and general sanitation.

A leaflet is served on the occupiers of stables intimating the grave danger to public health which may arise from flies, and the necessity to adopt all possible precautions and attack their breeding places. The co-operation of the occupiers of all stables is asked, in order that the means adopted by the Health Committee for the extermination of flies may be successful, and as a result, in a large number of cases, middensteads have been dispensed with, the manure being removed daily by the City Engineer's Department.

The total number of visits to stables during the year was 13,057.

Middensteads in connection with stables are systematically sprayed with lime to check the breeding place of flies, and the number thus dealt with during the year was 25,434.

Having regard to the increased use of motors it was anticipated that the number of stables in the city would decrease. During the year all the premises formerly occupied as stables have been re-visited, and the following figures indicate the position at the end of the years 1921 and 1928 :—

		1921.	1928.
Number of stables existing and in use	... ..	2,078	1,445
„ „ unoccupied and disused	... ..	1,478	1,503
„ horses	... ..	9,940	7,193
„ middensteads	... ..	1,302	937

It will be observed from the figures that there is a marked decrease in the number of stables, horses and middensteads, but as 1,503 stable premises have not been entirely abolished, and might be again used, they are also kept under systematic visitation.

## SHOPS ACTS, 1912, 1913.

In accordance with the provisions of the Shops Acts, a register of all shops within the city is kept up to date by systematic visitation. The Health Committee have made 15 half-holiday orders, and eight closing orders under the Act, and day and night visits are made to see that the provisions of these orders are carried out.

With regard to the half-holiday orders, the majority of the shops are closed at 1.0 p.m. on Wednesday.

The Shops (Early Closing) Acts, 1920-1 and 1928, are also administered by the officers appointed under the Shops Acts.

The shops inspectors, in addition to their duties under the above Acts are also concerned in the provision of sanitary conveniences in shops and the carrying out of that portion of the Public Health (Meat) Regulations which have reference to the sanitary condition of premises in which meat is sold or exposed for sale. They are also responsible for seeing that the shops are provided with suitable receptacles for trade refuse.

The officers of the Health Committee have received valuable assistance from the city police in carrying out the provisions of the Shops Acts and Orders made thereunder.

The female inspector, in addition to her duties under the Shops Acts, has also carried out the provisions of the order made by the Ministry of Health (Circular 325) with reference to "prohibition of the employment of women after childbirth," and in this connection 546 visits have been made to factories and workshops within the city. In each case, the female overseer was interviewed and the requirements of the order explained and, as a result of the visit and explanation, it may be anticipated that every precaution will be taken to see that the provisions of the order are carried out.

#### SHOPS ACTS, 1912-13 AND SHOPS (EARLY CLOSING) ACTS, 1920-21 AND 1928.

During the year complaints were received mainly in regard to the contravention of the Half-Holiday Order, with the following results:—

Number of complaints	...	...	...	...	...	452
„ visits by day	...	...	...	...	...	14,018
„ visits after 6 p.m.	...	...	...	...	...	278,273
„ informations	...	...	...	...	...	320
„ fined	...	...	...	...	...	194
„ withdrawn	...	...	...	...	...	20
„ discharged cautioned	...	...	...	...	...	106
Amount of fines and costs	...	...	...	...	...	£62 15 6

In addition to the above, it was found necessary to caution persons by letter for minor infringements of the Acts.

## CELLARS.

In view of the serious shortage of housing accommodation there is a tendency to re-occupy cellars as separate dwellings, many of which have been closed for several years, an annual inspection is therefore made of all cellars, and if any are found re-occupied, the usual notice is served.

## EXAMINATION OF CELLAR AND CELLAR DWELLINGS.

Number of inspections of street cellars	...	...	...	23,474
,, found illegally occupied	...	...	...	194
,, of inspections of court cellars	...	...	...	66
,, of notices issued to cease letting or occupying	...	...	...	326

## DEPARTMENTAL REFERENCES.

The co-operation which the Public Health Department receives from other departments of the Corporation is fully appreciated, and as a result many sanitary defects are brought to notice, and at once dealt with by the Sanitary Department. Were it not for this early intimation it is possible that defects might remain undiscovered until such time as the district inspector visits the premises in the course of house-to-house inspection.

## REFERENCES FROM OTHER DEPARTMENTS.

From City Engineer	...	...	...	...	4,391
,, Water Engineer	...	...	...	...	8,615
,, Lodging-house inspectors	...	...	...	...	12,525
,, Education Department (suspected infection in school children)	...	...	...	...	8,875

## REFERENCES TO OTHER DEPARTMENTS.

The officers of the Health Department co-operate with other departments by referring to them matters which are outside the scope of the Health Department, such as waste of water, choked gullies, defective street and passage pavements, dangerous walls, floors and roofs.

To City Engineer	...	...	...	...	8,800
,, Building Surveyor	...	...	...	...	6,409
,, Water Engineer	...	...	...	...	10,020
,, Education Department (school children suffering from infectious diseases)	...	...	...	...	20,395
,, Other departments	...	...	...	...	705

## RATS AND MICE (DESTRUCTION) ACT, 1919.

Active measures have been taken within the city throughout the year to ensure the destruction of as many rats as possible, and also to bring to public notice the necessity for reducing the rat population to the lowest possible dimensions. There are special reasons for a constant campaign against rats in Liverpool. The first is the possibility of the spread of plague, a disease which from time to time is brought into the port on ships arriving from foreign countries. The destruction and damage to property, foodstuffs, etc., by means of rats further justifies the stringent measures which are constantly being taken against these vermin. In this connection the co-operation of warehouse owners and occupiers of rat-infested premises is always sought and obtained.

Ten rat-catchers are constantly engaged in the extermination of rats, four being engaged in that connection in warehouses, which are visited every three months, in accordance with arrangements made with the Ministry of Health. For the purpose of systematic inspection the city has been divided into six districts, and the remaining six rat-catchers systematically visit cafés, fried fish shops, grocery shops, foodstores, bread shops, and all other places where rats are likely to be found. When a rat-catcher visits rat-infested premises, he operates for a few days, and by so doing indicates to the occupier methods whereby he can help in the extermination of rats. In the event of the occupier failing to take action a notice is served under the Rats and Mice (Destruction) Act, 1919.

The assistance given by the rat-catchers is appreciated by occupiers and owners of premises, who are always willing and anxious to forward the extermination of rats.

To save the time of the rat-catchers and to provide for the destruction of the rats as quickly as possible, each rat-catcher is met at a certain

place every morning, the rats being collected and labelled and a proportion taken the same day for examination by the City Bacteriologist.

The City Engineer's Department has also done valuable work in catching rats in public sewers, which are collected and dealt with in the same way.

Copies of the memorandum prepared by the Medical Officer of Health as to the destruction of rats have been widely circulated, and postcards are left with warehouse keepers so that information may be at once obtained in the event of any unusual mortality amongst rats.

An office record is kept indicating the number of complaints received and a register of all premises visited, whilst the rat-catcher enters in his daily report book full details of each day's work.

It has not been found necessary to take any proceedings for non-compliance with the provisions of the Act.

To ascertain from time to time the condition of the city in regard to rat infestation a weekly return is obtained from all the officers employed by the health department, who in the ordinary course of their daily duties visit different types of premises, and at the same time make inquiries in regard to the presence of rats. In the event of an intimation of the presence of rats a visit is at once paid by the rat-catcher to the premises.

#### NUMBER OF RATS CAUGHT.

Number of rats caught in warehouses	...	...	...	4,470
„ rats obtained from other sources	...	...	...	6,392
„ rats caught by City Engineer (sewerage dept.)				5,802

**Administration of the Factory and Workshop Act, 1901, in  
connection with  
FACTORIES, WORKSHOPS, WORKPLACES & HOMEWORK**

The following Tables are prepared by request of the Secretary of State :—

**1.—Inspection of Factories, Workshops and Workplaces.**

Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises.	Number of		
	Inspections.	Written Notices	Occupiers Prosecuted.
<i>Factories</i> ... .. (Including Factory Laundries.)	5,644	398	—
<i>Workshops</i> ... .. (Including Workshop Laundries).	11,327	871	—
<i>Workplaces</i> ... .. (Other than Outworkers' premises)	1,211	5	—
<b>TOTAL</b> ... ..	18,182	1,274	—

**2.—Defects Found in Factories, Workshops and Workplaces.**

Particulars.	Number of Defects.			Number of offences in respect to which Prosecutions were instituted.
	Found.	Remedied.	Referred to H.M. Inspector.	
<i>Nuisances under the Public Health Acts :*</i>				
Want of cleanliness ... ..	789	789	—	—
Want of ventilation ... ..	35	35	1	—
Overcrowding ... ..	1	1	—	—
Want of drainage of floors ... ..	4	4	—	—
Other nuisances ... ..	644	644	—	—
Sanitary accommodation—				
Insufficient ... ..	39	39	—	—
Unsuitable or defective ... ..	399	399	—	—
Not separate for sexes ... ..	19	19	—	—
<i>Offences under the Factory and Workshop Acts :—</i>				
Illegal occupation of underground bakehouse (s. 101)... ..	3	3	—	—
Other offences ... ..	—	—	47	—
(Excluding offences relating to outwork and offences under the sections mentioned in the Schedule to the Ministry of Health (Factories and Workshops Transfer of Powers) Order, 1921)				
<b>TOTAL</b> ... ..	1,933	1,933	48	—

\*Including those specified in sections 2, 3, 7 and 8 of the Factory and Workshop Act, 1901, as remediable under the Public Health Acts.

There were no cases of outwork in unwholesome premises (sec. 108) during the year.

### AMBULANCE AND DISINFECTING STAFF.

There were 6,399 cases of infectious disease removed to hospital by officers of the ambulance staff during the year.

The number of rooms stripped or sprayed was 3,517, and the number of rooms disinfected 41,303. There were also 2,635 library books disinfected.

The number of articles (bedding, clothing, etc.) disinfected at the disinfecting apparatus was 51,824, in addition to 77,341 other articles.

Two disinfecting stations have been established in the city for a number of years, each well equipped to deal with large quantities of material. The north end of the city is served by the Charters Street station and the south end by the Smithdown Road station. When necessary the disinfecting apparatus attached to each of the city hospitals may be utilised.

### DISINFECTION OF TRANSMIGRANTS.

Typhus fever, which is a vermin-transmitted disease, has caused the Ministry of Health and also the American Health Authorities to view the arrival of emigrants and transmigrants from Central Europe en route to America with some anxiety.

The emigration houses where these people reside, pending the sailing of the vessel, are kept under strict supervision by the lodging-house inspectors, being visited daily, and all cases of infectious illness promptly reported to the shipping company's doctor and the local health authority. The bedding is also frequently examined and attention is given to the occupation of the rooms to prevent over-crowding and to ensure cleanliness.

### RECORD OF REMOVAL OF HUMAN REMAINS.

#### ST. MARY'S CEMETERY, WALTON ROAD, LIVERPOOL.

Total number of persons removed	...	...	...	1,289
Number of persons removed from graves	...	...	...	615
Number of remains of persons removed	...	...	...	674

All the above remains of persons have been re-interred in Section A, Church of England, Everton Cemetery.

### MORTUARIES.

The Mortuary at the Prince's Dock is for the reception of the bodies of persons who have been drowned, killed or found dead, and upon which the Coroner desires to hold inquests. Bodies are taken to this mortuary by the police, and when it is necessary to make post-mortem examinations. During the year the number of bodies removed to Prince's Dock Mortuary was :—From the river, 8, and from the city, 334.

The method of transport of the bodies of persons killed, or found dead in the street, has been adequately provided for, the Health Committee having arranged, through the Chief Constable, with a firm of undertakers to supply a hearse on short notice, together with a shell coffin. This arrangement has proved satisfactory.

The district mortuaries are seldom used. For the convenience of juries, as well as for other reasons, it is preferable that bodies should be conveyed to the central mortuaries. The Ford Street mortuary is provided for the reception of bodies which cannot be kept at the homes in which death had taken place, without possible injury to the health of the inmates, and is also used for the reception of stillbirths. The number of bodies received during the year was 322.

### CREMATORIUM.

The Crematorium, which is situated in Anfield Cemetery, was opened by the Liverpool Crematorium Company in the year 1896. When the Corporation became the Burial Authority for the city, the administration was taken over in October, 1908, by the Crematorium Sub-Committee.

The Crematorium is attached to a Chapel, beneath which is a spacious columbarium, or chamber, fitted with small niches, used as the resting places for urns holding the ashes of the dead. The niches are closed with marble slabs bearing suitable inscriptions.

The Garden of Remembrance, which was opened on July 28th, 1927, is a plot specially reserved within the Crematorium grounds for the depositing of ashes, where this method of disposal is desired by the relatives. Disposal of ashes in this way involves no extra charge.

The number of cremations which have taken place since the opening is shown in the following table :—

1896.....	2	1914.....	49
1897.....	10	1915.....	53
1898.....	27	1916.....	58
1899.....	23	1917.....	62
1900.....	40	1918.....	70
1901.....	40	1919.....	88
1902.....	54	1920.....	70
1903.....	35	1921.....	74
1904.....	40	1922.....	74
1905.....	35	1923.....	62
1906.....	46	1924.....	74
1907.....	34	1925.....	75
1908.....	32	1926.....	96
1909.....	46	1927.....	101
1910.....	37	1928.....	103
1911.....	50		
1912.....	52		1,778
1913.....	66		

### SMOKE NUISANCES.

Proceedings for the abatement of nuisances caused by the emission of excessive smoke from factories, steamers, etc., were taken under the following act :—

THE LIVERPOOL CORPORATION ACT, 1921.—SECTION 427 AND 473.

#### REPORTS FOR EXCESSIVE SMOKE.

Number of reports <i>re</i> factories	...	...	...	...	17
„ „ <i>re</i> steamers in dock	...	...	...	...	9
„ „ <i>re</i> steamers in river	...	...	...	...	138
Total	...	...	...	...	164

Seventy-six steamship owners were communicated with, or written to, in respect of nuisances caused by the emission of excessive smoke, and 1,583 manufacturers and 162 steamship owners cautioned.

#### INFORMATIONS FOR EXCESSIVE SMOKE.

Information against occupiers of factories	...	...	16
„ „ owners of steamers in river	...	...	66
„ „ „ „ in dock	...	...	3
Total	...	...	85

			Acquitted or withdrawn.	Fined.	Amount of Fines.
Factories	...	...	1	15	£7 14 0
Steamers	...	...	1	68	£47 10 0
			<hr/> 2	<hr/> 83	<hr/> £55 4 0

## SMOKE INSPECTION.

The total number of complaints received of nuisances caused by smoke from defective state of flues, low chimneys, etc., was 56, and the visits relating to same numbered 804.

Chimneys raised in consequence of complaints received..	10
Flues altered or repaired ... ..	2
Complaints under observation ... ..	44
Complaints referred to other departments ... ..	0
Complaints not sustained ... ..	0
<b>Total</b> ... ..	<hr/> 56

## SMOKE ABATEMENT.

INDUSTRIAL SMOKE.—Continuous observations are kept on all the principal chimneys in the city with regard to the emission of excessive smoke, and as the figures show, a marked improvement has been made in the amount of excessive smoke from factories.

Most of the large factories have been fitted with new modern steam generators, which are mechanically supplied with fuel and air, and the amount of smoke emitted is reduced to a minimum.

The smaller factories continue to use the old method of hand stoking, and as these are much greater in number, particular observations have to be taken, and visits made, in order that the necessary care in stoking and tending of furnaces shall not relax.

Small vertical type boilers are in use to some considerable extent, and when coal is used as fuel, a certain amount of nuisance is caused. This type of boiler is constructed for the use of coke as fuel, and when coke is substituted there is no further cause for complaint.

PULVERIZED FUEL.—The latest method of generating steam in boilers is by firing them with pulverized fuel, and though the method is as

yet in its infancy, it is one which must be considered as the method of the future. A greater sense of adjustment—air and fuel supply—can be made, than when using fuel in the ordinary way, so that almost perfect combustion can be obtained.

There are two factories in the city working with this method, but so far the results obtained have not proved satisfactory. From the point of view of smoke abatement, there has been so far an entire absence of smoke or grit emission.

LOW CHIMNEYS.—During the year 10 chimneys were raised in consequence of complaints received. It is often found that products of combustion emitted from a chimney cause a nuisance to the surrounding inhabitants, due to the chimney being too low. A change of fuel will sometimes remedy this, but where this was not practicable, notices were served on the occupier to raise the chimney.

STEAMERS IN DOCK AND ON THE RIVER.—Special attention has been given with regard to excessive smoke emitted from vessels in dock and plying on the River Mersey. There were 147 reports of excessive smoke from steamers in dock and on the river, 78 of which related to foreign-going vessels. No proceedings were taken with regard to this class of vessel, but the owners were communicated with in respect to the nuisance. The number of proceedings with regard to steamers were 69, of which 68 were convicted and one discharged with a caution.

DOMESTIC SMOKE.—There is no legislation to deal with this nuisance. Individually the amount of smoke emitted from domestic chimneys is small. Collectively it is heavy, almost as heavy as that of industrial chimneys. What is required for domestic fireplaces is a form of fuel which may be termed a semi-distilled coal. A local company are now retailing a fuel known as "Coalite," which, though slightly more expensive than coal, is a very satisfactory substitute. It ignites easily in a domestic fireplace, and burns clearly without emitting smoke.

The demand for this type of fuel has been so great, that it has been impossible to give adequate supplies, but the works are now being extended, and it is hoped that this fuel will soon be in almost universal use.

### ATMOSPHERIC POLLUTION.

The analyses of the deposits collected from the atmospheric pollution gauge at the North Tuberculosis Dispensary in Netherfield Road are shown in the table (page 179). This is the eighth complete year's record since the gauge was reinstalled at the end of the war. It will be seen that deposits of soot and other material fell on every square mile of that part of the city in amounts averaging 56 tons per month, as against 50 tons in 1926 and 1925, 51 tons in 1924 and 59 tons in 1923; the higher total for 1928 was entirely due to the high total of the deposits for November and December, the high figure for November was mainly mineral matter, much of it being salt, and was associated with a period of heavy rainfall. The deposits were lowest in April, July and August.

The collected rainwater was acid for only three months out of the twelve, namely, January to March, but alkaline for the rest of the year. This period of acidity corresponds to the winter months, when domestic fires are most in use. The acidity is mainly due to the combustion of the sulphur compounds in coal. It is this acidity which has such a deleterious action on bronze statues and stone work containing large amounts of carbonate of lime.

It will be seen that 394 out of 675 tons, or about two-thirds of the deposits consist of mineral matter. The remainder is mainly sooty matter derived, in residential districts, mostly from domestic fires consuming coal. Relief is mainly to be sought in the increased use of electricity, of gas, and of smokeless fuels. These particles of suspended matter assist in the production of fogs and diminish to a considerable extent the amount of sunlight received, especially tending to cut off the ultra-violet rays, whose action is of value in the prevention of rickets and other affections.

At the end of the year a second gauge was purchased and placed in the grounds of the Carnegie Welfare Centre in Mount Pleasant. This will serve as a useful comparison with the first gauge.

# ATMOSPHERIC POLLUTION, 1928.

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RESULTS OF ANALYSES BY THE CITY ANALYST (RESULTS CALCULATED IN TONS PER SQUARE MILE).

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Totals for 12 months.
Sum Total Solids .....	57.97	62.79	50.82	34.93	43.07	51.89	30.77	38.08	40.13	50.47	123.17	91.30	675.39
UNDISSOLVED MATTER—													
Tarry Matter and Bitumen	0.84	0.69	0.46	0.33	0.39	0.48	0.37	0.43	0.28	0.55	0.73	0.33	5.88
Other Organic Matter .....	7.01	6.55	7.78	6.05	8.60	8.52	5.64	6.42	5.69	7.82	17.04	17.34	104.46
Mineral Matter .....	18.70	19.64	23.94	18.02	21.46	16.88	12.83	14.43	21.16	20.22	45.31	51.59	284.18
Total Undissolved Matter ...	26.55	26.88	32.18	24.40	30.45	25.88	18.84	21.28	27.13	28.59	63.08	69.26	394.52
DISSOLVED MATTER—													
Organic Matter by Ignition	8.88	10.10	6.27	3.39	5.03	10.79	3.69	5.90	4.00	2.48	17.74	6.61	84.88
Mineral Matter .....	22.54	25.81	12.37	7.14	7.59	15.22	8.24	10.90	9.00	19.40	42.35	15.43	195.99
Total Dissolved Matter .....	31.42	35.91	18.64	10.53	12.62	26.01	11.98	16.80	13.00	21.88	60.09	22.04	280.87
Alkalinity as $\text{NH}_3$ .....	—	—	—	0.07	0.07	0.20	0.05	0.15	0.05	0.12	0.22	0.08	1.01
Acidity as $\text{H}_2\text{SO}_4$ .....	1.50	0.33	0.15	—	—	—	—	—	—	—	—	—	1.98
Chlorine as $\text{Cl}$ .....	5.82	10.53	2.22	1.40	1.11	3.37	0.90	1.56	1.32	3.85	18.73	2.27	53.08
Ammonia as $\text{NH}_3$ .....	0.93	0.36	0.36	0.18	0.25	0.92	0.35	0.60	0.33	0.54	0.90	0.15	5.87
Sulphate as $\text{SO}_3$ .....	7.04	6.96	5.15	2.86	3.62	7.52	3.49	5.13	4.15	7.98	12.93	6.64	73.47
Lime as $\text{CaO}$ .....	3.06	4.00	1.38	1.47	1.34	3.80	1.05	1.76	1.66	2.03	3.42	2.68	27.65
RAINFALL {													
Millimetres ...	133.98	68.39	41.08	22.20	35.98	124.41	41.34	86.26	32.66	88.48	122.11	58.40	855.29
Inches .....	5.27	2.69	1.61	0.87	1.42	4.90	1.63	3.40	1.28	3.48	4.81	2.30	33.66

SPECIAL VISITS.

Number of	visits to railway carriages	...	...	...	444
„	„ „ platforms (fish arrivals)	...	...	...	103
„	„ poultry depots	...	...	...	404
„	„ manure depots	...	...	...	138
„	„ marine stores	...	...	...	873
„	„ fried fish shops...	...	...	...	3,083

Complaints are occasionally received from passengers directing attention to the dirty condition of railway carriages. These carriages are from time to time inspected, and if they are found in an unclean condition the railway company concerned is informed and the matter receives prompt attention.

The manure depots are situated in close proximity to the north corporation destructor, and visits are made to them to see that the manure which has been received from the stables in the centre of the city is frequently removed so as to avoid the possibility of breeding places for flies.

HOUSE-TO-HOUSE INSPECTION.

The systematic house-to-house visitation by the district male staff is shown in the following table:—

Number of street houses examined	...	...	...	115,860
„ court houses examined	...	...	...	1,941
				<hr/>
Total	...	...	...	117,801
				<hr/>
Number of apartments examined	...	...	...	599,172
„ houses where nuisances existed	...	...	...	40,321

INFECTED HOUSES.

The following table shows the number of houses visited where notifiable infectious diseases have occurred, with the number of visits to these houses, and to houses where cases of non-notifiable infectious diseases have been reported to the Health department by the Education department:—

Number of street houses where notifiable disease occurred...	9,366
„ court houses where notifiable diseases occurred...	124
„ visits to infected houses and cellars (notifiable cases) ... ..	20,177
„ visits to infected houses and cellars (school cases)	8,032
„ visits and re-visits to Phthisis cases ... ..	6,543
„ enquiries <i>re</i> suspected Smallpox contacts ...	817
„ other enquiries ... ..	107

#### COURT AND ALLEY EXAMINATIONS.

Number of inspections of courts and alleys ... ..	13,524
„ „ water-closets ... ..	4,520
„ water-closets found dirty, but cleansed by officers' instructions ... ..	20,741

#### PICTUREDROMES.

At the request of the Licensing Justices, officers of the Health Committee systematically visit all picturedromes to see that the means provided for the ventilation of the auditorium is in use, attention also being directed to the condition of the sanitary conveniences, provision of seats for the attendants, the general cleanliness of the premises, and the water supply.

During the year 281 night visits were paid, and on each occasion the premises were found to be in a satisfactory condition, a day inspection is also made so that closer attention may be given to the examination of the sanitary conveniences.

#### SHAVING BRUSHES.

As a precautionary measure in connection with the possible spread of anthrax from shaving brushes, samples of these brushes are purchased from shops in different parts of the city, all of which are submitted to the City Bacteriologist for examination.

Number of shaving brushes submitted during the year ...	49
„ found infected with Anthrax ... ..	Nil.

### COMMON LODGING HOUSES.

At the end of the year 1927 there were on the register (including emigration houses), 143 lodging houses. During the year 1928, 15 houses were given up and removed from the register, and 7 new houses added, leaving, at the end of 1928, 135, providing accommodation for 6,558 lodgers.

Under Part 5 of the Public Health Acts Amendment Act, 1907, Sections 69 to 72 (adopted in 1912), 81 keepers were re-registered and 26 deputy-keepers registered.

### INSPECTION OF LODGING HOUSES.

Visits by day	...	...	...	...	...	6,334
„ night	...	...	...	...	...	847
Visit to houses not on register	...	...	...	...	...	125

No informations have been laid against keepers during the year.

### INFECTIOUS DISEASES IN LODGING HOUSES.

Eighteen cases of infectious disease were notified during the year, the necessary disinfection and cleansing of the premises being carried out after each case.

One hundred and twenty-five persons living in common lodging houses were notified as suffering from phthisis. In all cases where patients on discharge from a sanatorium return to these houses, instructions are given regarding the isolation of the patient, and the precautions to be taken to prevent the spread of infection.

Enquiries were also made regarding 63 cases of Trachoma or Conjunctivitis occurring amongst transmigrants passing through Liverpool, the majority of which were notified from various ports in England where they landed from the continent. Prior to sailing for the American continent, persons affected with these diseases are re-examined by the doctors attached to the various shipping companies.

Those rejected are either placed under treatment in the care of the shipping companies or are taken charge of by the Jewish Board of Guardians until they are certified fit to sail, and should they not recover

within a reasonable time they are returned home. During this period the patients are kept under observation by the department and their ultimate destination ascertained, as shewn in the following table:—

#### TRACHOMA OR CONJUNCTIVITIS.

Cases under treatment 1st January, 1928	..	...	...	0
„ notified from Hull or other ports	...	...	...	60
„ discovered in Liverpool	...	...	...	3
				<hr/>
				63
				<hr/>
Number of above who sailed for U.S. of America or Canada				61
Number returned home	...	...	...	2
				<hr/>
				63
				<hr/>

There are 14 houses providing accommodation for 522 women lodgers. For details of women's lodging houses see reports for the years 1909 and 1914.

#### SEAMEN'S LICENSED LODGING HOUSES.

The Corporation have made byelaws, with the sanction of the President of the Board of Trade, for the licensing of Seamen's lodging houses, under the Merchant Shipping (Fishing Boats) Act, 1883. Section 48.

Applications from the keepers of registered common lodging houses for licenses under the Act are infrequent, the number of licenses granted since the adoption of the Seamen's lodging-house byelaws being 33, and only two such licensed houses are now on the register, providing accommodation for 46 seamen.

It has not been found necessary to institute proceedings under the byelaws. Since the privilege to board vessels and seek for lodgers is withdrawn, it does not appear that there is any advantage to the keeper of a common lodging house to have his premises registered as a seamen's lodging house, hence, probably, the small number upon the register.

#### HOUSES LET IN LODGINGS (SUB-LET HOUSES).

The supervision of these houses is carried out under byelaws made by the City Council and confirmed by the Ministry of Health, power

being given to deal with overcrowding, non-separation of the sexes, cleansing of floors, stairs and passages, ventilation of rooms, prevention of the spread of infectious disease, provision of w.c. accommodation, and the limewashing of walls and ceilings of houses, yards and water closets.

Amended byelaws, which came into operation in 1911, gave powers requiring 400 cubic feet for *each* person occupying a room which is not exclusively used for sleeping purposes, the separation of the sexes, in rooms occupied by the tenant's family, or in rooms over which he retains possession or control. Lodgers are made responsible for overcrowding, and for the separation of sexes, in rooms let to them, and for the cleansing of the floors, and for the cleansing of the stairs, passages, and landings used exclusively by them.

Powers were also given to enforce the provision of water-closet accommodation (one water-closet for every twelve persons), the limewashing of walls and ceilings of houses, yards and water-closets at stated intervals.

During the last twenty years the character of sub-let houses (and also of the tenants) has undergone a change, and the number of such houses on the register has increased.

Previous to this period sub-letting was almost entirely confined to streets (and even districts) within the old city boundary.

The class of property used for this purpose consisted mainly of the three-roomed back-to-back type of house (both front and in courts), occupied by two families, sometimes accommodating a family in each of the three rooms.

The demolition of this insanitary property and the erection of Artisans' Dwellings by the Housing Committee in their place, re-housed most of the people in self-contained tenements, the remainder finding accommodation in the larger six and eight-roomed houses in the vicinity.

Sub-letting continues in the latter type of house, but the overcrowding has diminished owing to the fact that in these houses there are more apartments and of greater cubic-capacity.

Another cause in the decrease of overcrowding has been the removal of works to the outskirts of the city, which has induced many workers to migrate to the suburbs so as to be near their places of employment. This has resulted in a large amount of sub-letting in streets where it was almost previously unknown, but it covers a wide area in a scattered fashion. This property is more suitable for the accommodation of more than one family, and the chances of overcrowding are naturally reduced, but at the same time there has been increased difficulty in supervision. It is unfortunate that in some instances the living-rooms have been utilised as sleeping apartments, which for some time past it has been the policy of the department to discourage.

The people themselves also appear to desire to live under better conditions than formerly, which is made evident by the fact that there has been a reduction in the number of infringements of the bye-laws. Whereas it was once necessary to institute police court proceedings to have these offences abated, it is now sufficient to point out how, by a re-arrangement of the sleeping apartments, the overcrowding can be abated without any inconvenience to the occupants. This advice is accepted and appreciated, judging by the amicable way in which it is carried out.

During the last few years many large residences in the best parts of the city have been rented for the purpose of sub-letting on the flat system by the tenants and by the owners themselves in many instances. These are not as convenient as flats, as they are not self-contained, and the occupants have to use a common water supply and sanitary conveniences. The rooms are commodious, well-furnished and kept in good condition, and are tenanted by married couples with few or no children, or in a few cases by a couple of friends jointly. Supervision by the department is not necessary to any great extent. The question of finance to this class of sub-tenant is not so important, as the rents charged for the rooms vary from 12s. to 20s per week, which would pay the rental of an ordinary dwelling-house. It appears to be more in the nature of a desire to be labour saving.

INSPECTION OF HOUSES LET IN LODGINGS.

Houses on register, December 31st, 1927	...	...	18,069
„ removed from register during 1928	...	...	1,357
„ added to register during 1928	...	...	194
„ on register, December 31st, 1928	...	...	16,906

## DAY VISITS :

Day visits	...	...	...	...	...	...	124,298
Rooms measured	...	...	...	...	...	...	991
Floors found dirty	...	...	...	...	...	...	463
Floors found cleansed on revisit	...	...	...	...	...	...	459
Stairs and passages dirty	...	...	...	...	...	...	136
Stairs and passages found cleansed on revisit	...	...	...	...	...	...	135

Informations were laid for not washing floors, 1; and not cleaning stairs, passages, 3.

CLEANSING OF WALLS AND CEILINGS.

The following notices were served on landlords of houses let in lodgings during the year under Section 7 of the 1911 byelaws :—

Preliminary notices to cleanse wall and ceilings	...	22					
Statutory	„ „ „ „	...	5				
Houses cleansed	...	...	...	...	...	22	
Rooms	„	...	...	...	...	...	141

REFERENCES FROM OTHER DEPARTMENTS.

All these references relate to matters within the province of the department to deal with:—

Received from Sanitary Department	...	...	...	145
„ by anonymous complaints	...	...	...	37
„ by tenants'	„	...	...	42
„ by lodgers'	„	...	...	19
„ by other sources	...	...	...	26

## REFERENCES TO OTHER DEPARTMENTS.

The number of references to other departments was :—

Referred to Sanitary department	...	...	...	...	11,158
„	„	(Special)	...	...	940
„	City Engineer	...	...	...	95
„	Water	„	...	...	2,113
„	City Surveyor	...	...	...	1,256
„	Health Visitors and other departments	...	...	...	14

## NIGHT VISITS.

### OVERCROWDING :

Houses visited between 11-45 p.m. and 2 a.m.	...	...	...	16,915
Cases of overcrowding found	...	...	...	818
Visit to instruct how to arrange so as to abate overcrowding	...	...	...	818
Re-inspection after instructions given	...	...	...	1,291
Cases of overcrowding abated on re-inspection	...	...	...	730
Informations laid for overcrowding	...	...	...	11
Convictions for overcrowding	...	...	...	8
Dismissed cautioned	...	...	...	2
Withdrawn, overcrowding abated	...	...	...	1

### DETAILS OF OVERCROWDING :

Overcrowding by families occupying 1 room...	...	...	255		
„	„	„	2 rooms	...	372
„	„	„	3 or more rooms	...	191

### NON-SEPARATION OF SEXES :

Cases found	...	...	...	...	153
Visit to instruct how to re-arrange so as to separate the sexes	...	...	...	...	153
Re-inspection after instruction given...	...	...	...	...	231
Cases abated on re-inspection...	...	...	...	...	151
Informations laid	...	...	...	...	1
Convictions	...	...	...	...	1

Obstructing Inspector, after obtaining admission to house—

Information	...	...	...	...	1
Conviction	...	...	...	...	1

The following table shows the number of Houses let in Lodgings on the register, together with the number of visits at night for the prevention of overcrowding and non-separation of sexes for the past 10 years :—

Year.	No. of Houses let in Lodgings on Register.	OVERCROWDING.					NON-SEPARATION OF SEXES.			
		No. of night visits.	No. of infringements found.	No. of infringe- ments found abated on re-visit.	No. of informa- tions laid.	No. of convictions.	No. of infringe- ments found.	No. of infringe- ments found abated on re-visit.	No. of informa- tions laid.	No. of convictions.
1919	14,636	23,350	1,537	755	198	191	287	69	106	97
1920	15,080	24,596	1,211	467	89	85	273	69	86	83
1921	15,332	24,851	1,157	1,114	55	45	208	200	45	37
1922	15,802	23,910	926	909	57	50	162	155	30	25
1923	16,639	24,118	1,007	920	35	28	166	153	19	16
1924	17,267	22,838	1,106	775	5	4	170	119	7	6
1925	17,601	22,600	935	678	3	1	186	149	5	2
1926	17,883	22,671	757	653	6	4	188	186	1	—
1927	18,069	19,379	950	749	9	4	195	148	2	1
1928	16,906	16,915	818	730	11	8	153	151	1	1

**CANAL BOATS ACTS, 1877 and 1884, and  
CANAL BOATS ORDERS, 1878, 1922 and 1925.**

---

The Leeds and Liverpool Canal Company are the proprietors of the only canal having direct communication with Liverpool, and the length of the waterway within the city, exclusive of the locks which lead to the docks, is about three miles.

The number of inspections of canal boats during the year was 2,551, and the condition of the boats and their occupants as regards matters dealt with in the acts and regulations are as follows:—

Boats on register, 1st January, 1928 ... ..	325
New boats registered ... ..	11
Boats removed from register ... ..	2
Boats on register, 31st December, 1928 ... ..	334
Boats on which contraventions occurred ... ..	*47

\* Of this number 20 were registered by other authorities.

Two copies of the registration certificates were issued owing to the original certificates being worn out.

**NATURE OF CONTRAVENTIONS :**

Unregistered boats used as dwellings... ..	6
No certificate of registration on board ... ..	9
Registered lettering, &c., not legible ... ..	8
Leaky decks ... ..	13
Cabins requiring repainting ... ..	5
No water cask, and defective water tank ... ..	2
Dirty condition of cabins ... ..	3
Defective bulkheads ... ..	2
,, cabin floor ... ..	1
,, stoves ... ..	7
,, bed berth ... ..	1
Cabin overcrowded ... ..	1

Written notices were issued to owners in 39 instances; verbal notices were given to masters in 7 instances, and to owner in 1 instance. All these notices have been complied with.

No informations were laid during the year against owners or masters for infringement of the acts or regulations, and no cases of infectious sickness were reported as having occurred on any canal boat visiting the district.

Ten motor-propelled boats and fifty-five steam-propelled boats are registered by this authority.

On May 1st, 1923, the Ministry of Health, under Section 10 of the Canal Boats Act, 1884, issued an order, cited as the Canal Boats Order, 1922. This order brings within the scope of the Canal Boats Acts all similar vessels which had hitherto been registered under the Merchant Shipping Acts, and consequently were exempt from inspection.

The inspectors of the Port Sanitary Authority during the year made 775 inspections, and 23 contraventions were discovered, which were subsequently dealt with. These figures are included in the foregoing table.

#### DETAILS OF VISITS TO BOATS PLYING ON CANAL.

Two hundred and ninety boats were visited, which were registered as follows :—156 at Liverpool, 22 Runcorn, 7 Leigh, 4 Wigan, 18 Manchester, 18 Chester, 33 Blackburn, 31 Leeds, 1 Burnley.

All were “ wide ” boats, 13 being propelled by steam, 33 steam-towed, 8 motor-driven, and the remainder horse-drawn.

The number of inspections of these 290 boats which were plying on the canal was 1,776, and the population as follows :—

Men.....	548	Males over 14 years of age.....	548
Women.....	88	„ over 5 and under 14.....	4
Children.....	25	„ under 5 years of age .....	8
		Females over 12 years of age.....	88
		„ over 5 and under 12.....	4
		„ under 5 years of age.....	9
	<hr/>		<hr/>
	661		661
	<hr/>		<hr/>

NOTE.—Males on attaining the age of 14 years, and females 12 years, living on canal boats, become adults, and are recorded as such in the above table.

(Regulation iii, Sec. 2, Canal Boats Act, 1877.)

Eight children of school age were found on canal boats during the year. Two were referred to the Education Authorities, the others being on trips with their parents during the school holidays.

No families were found on boats on the canal who had not a home ashore in addition to that on board.

### SUPERVISION OF FOOD SUPPLIES.

The necessity for ensuring a food supply which is pure, clean and free from disease devolves upon the Medical Officer of Health, and owing to the heavy and intricate nature of this work during the year it has been found necessary to give a steadily increasing amount of time and very careful and detailed consideration to food inspection generally.

The duties imposed upon the medical officer by various acts and orders are carried out by a fully qualified staff of food inspectors, and entail the examination of the carcasses of animals slaughtered for food at the Abattoir and private slaughter-houses, the inspection of meat, fish and fruit at the various wholesale, retail markets, and cold stores, also the inspection of shops, factories, etc., where foodstuffs are sold, prepared or stored for human food. Owing to the increasing growth and importance of this work serious difficulties have been encountered, due to the large increase in the numbers of animals slaughtered during the past few years, the distances between points of inspection, the extension of the city boundaries, and the limited number of inspectors available.

Two additional inspectors have been authorised and will shortly be appointed, but the question of the strength of this staff will again require consideration in the near future.

In connection with the general subject of food supply it has been suggested that food shops might be registered, and protection afforded to articles of food, such as meat, fish, fruit, etc., in a similar manner to that in which the milk trade is regulated.

There are 15 private slaughter-houses and two knackers' yards in the city, but only six of the slaughter-houses are being used to any great extent. Of these two are used solely for the slaughter of horses for export to Belgium and France for human food.

The inspection of these private slaughter-houses, which are widely distributed over the city, takes up much of the time of the staff.

During the past year, 33,389 animals were slaughtered in these slaughter-houses, and all carcasses were inspected before being allowed to leave the premises.

To meet the early morning trade at the wholesale markets the inspection staff begin duty before the markets are open for buyers in order that congestion may not occur through wholesalers being delayed by waiting for the inspection of their goods. Saturday evenings are also occasions for special inspection, the shops and markets being systematically inspected until 9 p.m.

Sunday is still one of the main days for slaughter at the central abattoir and at two or three of the private slaughter-houses; it has consequently been necessary to have some of the food inspectors on duty on such days. It is hoped that with the advent of the new abattoir at Stanley, slaughtering on Sundays will cease.

The number of animals slaughtered in the city again shows a large increase, which demonstrates the increasing importance of the city as a meat distributing centre. The following statistics prove the necessity of a definite and systematic food inspection, viz. :—During the year 469,713 animals were slaughtered at the central abattoir; 33,389 animals were slaughtered in private slaughter-houses; 45,064 were brought in already dressed from other centres, and 600,144 chilled and frozen carcasses were sold from the Gill Street meat market.

There were 6,136 animals which shewed abnormal conditions, and a detailed examination was made of each.

#### CASEOUS LYMPHADENITIS.

Owing to the prevalence of this disease in mutton carcasses imported from certain countries it was found necessary to make a thorough examination of all such carcasses arriving in this country; the examination was carried out at one or other of the cold stores.

The examination was commenced in November, and during this month and December a considerable number of carcasses were found to be affected with caseous lymphadenitis and were destroyed.

The examination is still being carried out, but the situation is shewing signs of improvement owing to a better detailed inspection at the time of slaughter. It should be noted that a large number of the above carcasses which were condemned were certified as "Inspected and Passed" in the country from which they came, and either bore a label or were stamped with indelible ink to that effect.

### ANTHRAX.

One case of anthrax was discovered in a bull which had been slaughtered in Cheshire and sent to the abattoir as dead meat. The carcase and organs were immediately burned and all the persons, including two food inspectors who had handled the meat were sent to Fazakerley Hospital, where they received a dose of preventive serum. None of these men developed anthrax, but the butcher who had dressed the animals in Cheshire was seriously ill for some weeks.

### IRISH DRESSED MEAT.

In previous years a small number of carcasses have been sent from Ireland to be sold at the Abattoir, but during 1928 this trade grew to a considerable extent.

These animals, principally cows, were slaughtered in Waterford and Cork, packed in crates or wrappers and sent to Liverpool for sale as dead meat. Great difficulty is experienced by the inspectors with this class of meat, as no organs are submitted and a large number of the carcasses were found to be seriously affected with tuberculosis, no inspection having been attempted at the time of slaughter. During the twelve months 216 sides of this meat were condemned as unfit for food on account of its diseased condition. The Town Clerk communicated with the authorities in the Free State, and towards the latter part of the year and beginning of 1929 the conditions shewed some improvement.

The duties of the staff have not been merely inspectorial, but efforts have been made to afford the trades generally information and assistance which would enable them to obviate the possibility of unsound food being sold to the public. The result of the co-operation between the trades and the inspectors has proved effective, and the system of food inspection thereby rendered more efficient.

THE TUBERCULOSIS ORDER OF 1925 aims at the eradication of tuberculosis from milking herds and a purer milk supply, and compels owners of cows to notify the local authority of any sign of tuberculosis in the herd. Should an animal be suspected it is examined by the veterinary inspector (see page 205).

### PRIVATE SLAUGHTER-HOUSES.

There are 15 private slaughter-houses in the city, which have been well conducted and kept in good condition. A number of such slaughter-houses are situated in cramped and congested positions, and are not suitable places for the slaughter of animals, but owing to the great congestion at the central abattoir it has been found necessary to keep these places in use until such time as a new public abattoir is built. Of the 15 private slaughter-houses five are registered and 10 are licensed; this shews a reduction of four licensed slaughter-houses when compared with 1920.

### ABATTOIRS.

The condition of the present abattoir has been commented upon during previous years, and it is gratifying to note that the plans approved by the City Council in 1927 have, after a Public Inquiry, received the sanction of the Ministry of Health. Building operations have commenced on the Stanley Cattle Market site, and it is hoped to give a detailed description of the new Abattoir and its construction in a future report. The number of animals slaughtered in the city shews an increase of 21,465 animals when compared with 1927. Imported meat also shews an increase of 59,280 carcasses, while home killed dressed meat shews a decrease of 758 carcasses. The total number of carcasses sold from the meat markets, including animals slaughtered in the city carcasses sent in already dressed, and imported carcasses (i.e., frozen and chilled meat) amounted to 1,148,310. In addition 59,194 boxes and bags of meat and offal were sold in the markets.

## ANIMALS SLAUGHTERED FOR HUMAN FOOD IN THE CITY.

	Bulls	Bullocks.	Cows.	Heifers.	Calves.	Sheep.	Lambs.	Goats.	Swine.	Horses
Public Abattoir	324	12,440	16,000	1,737	29,000	47,129	319,205	80	43,798	—
Private slaughter-houses ...	1	138	194	103	921	326	3,900	2	26,965	839
<b>TOTAL</b> ...	<b>325</b>	<b>12,578</b>	<b>16,194</b>	<b>1,840</b>	<b>29,921</b>	<b>47,455</b>	<b>323,105</b>	<b>82</b>	<b>70,763</b>	<b>839</b>

There are no horse flesh shops in the city, but 839 horse carcasses were inspected and stamped by the food inspectors before leaving the slaughter-house, with the exception of 20, which were rejected as unfit for human food.

## CARCASSES TOTALLY OR PARTIALLY DESTROYED.

Disease.	No.	Disease.	No.
Anthrax ... ..	1	Joint Ill ... ..	5
Anaemia ... ..	2	Nephritis ... ..	3
Abscess ... ..	12	Oedema ... ..	1
Asphyxia ... ..	246	Osteomyelitis ... ..	1
Caseous Lymphadenitis ...	322	Parturient Apoplexy ...	1
Decomposition ... ..	42	Pleurisy ... ..	6
Distomatosis ... ..	174	Pneumonia ... ..	29
Dropsy ... ..	365	Peritonitis ... ..	26
Emaciation ... ..	514	Pyæmia ... ..	5
Enteritis ... ..	26	Septicæmia ... ..	17
Erysipelas ... ..	4	Septic Arthritis ... ..	70
Endocarditis ... ..	2	„ Pericarditis ... ..	11
Gangrene ... ..	1	„ Mastitis ... ..	12
Gastritis ... ..	2	„ Metritis ... ..	11
Gastro Enteritis ... ..	3	Swine Fever contact ...	160
Hepatitis ... ..	1	Tuberculosis ... ..	2,373
Icterus ... ..	36	Traumatic Mammitis ...	2
Immaturity ... ..	71	Uraemia ... ..	1
Injury ... ..	439		
John's Disease ... ..	3		

During the year 2,582 carcasses were rejected as unfit for human food, in addition to 944 destroyed at the knackers' yards.

## ORGANS DESTROYED

Disease.	No.	Disease.	No.
HEADS :—		Swine Fever Contact ...	92
Tuberculosis ...	686	Abscess ...	24
Abscess ...	94	Cysts ...	107
Actinomycosis ...	26	SPLEENS :—	
Injury ...	15	Tuberculosis ...	925
Decomposition... ..	80	Abscess ...	16
LUNGS :—		Decomposition... ..	40
Tuberculosis ...	1,871	Melanosis ...	3
Abscess ...	317	STOMACHS :—	
Echinococci ...	1,178	Tuberculosis ...	767
Pleurisy... ..	22	Abscess ...	2
Pneumonia ...	2	Decomposition... ..	44
Aspirated Stomach contents		Swine Fever Contact ...	92
and Congestion ...	567	INTESTINES :—	
Decomposition... ..	559	Tuberculosis ...	889
Unclassified Cystic conditions	175	Swine Fever Contact ...	92
Melanosis ...	5	Enteritis ...	2
Swine Fever Contact ...	92	KIDNEYS :—	
LIVERS :—		Tuberculosis ...	899
Tuberculosis ...	1,517	Cirrhosis ...	15
Abscess ...	251	Nephritis ...	4
Distomatosis ...	6,674	Decomposition... ..	28
Cav. Angeioma ...	78	Cysts ...	26
Echinococci ...	258	Abscess ...	3
Decomposition... ..	601	UDDERS :—	
Cirrhosis ...	896	Tuberculosis ...	27
Degenerated Cysts ...	236	Mammitis ...	173
Swine Fever Contact ...	92	Abscess ...	1
Unclassified Cystic conditions	695	Decomposition... ..	7
Necrosis ...	1	TAILS :—	
HEARTS :—		Decomposition... ..	69
Tuberculosis ...	1,211		
Pericarditis ...	5		
Decomposition... ..	327		

**QUANTITIES OF FISH, RABBITS, POULTRY AND GAME WHICH PASSED THROUGH THE WHOLESALE MARKET.**

FISH.				RABBITS.	POULTRY.	GAME.
Wet. Tons.	Dry. Tons	Shell. Tons.	Salmon. Tons.	No. of Packages.	No. of Packages.	No. of Packages.
15,986	1,014	358	50	7,346	7,337	337

The above figures do not include packages of fish, rabbits, etc., dealt with by firms not under the control of the Markets Committee

**FRUIT AND VEGETABLE MARKETS.**

Large consignments from all over the world passed through the fruit markets during the year. The wholesale depot in Queen Square, Liverpool, is the principal distributing centre in the country for imported fruit, and during the year 102,656 tons of vegetables passed through the vegetable market.

**PREMISES VISITED BY THE FOOD INSPECTORS.**

Slaughter houses.	Butchers' shops.	Fruit shops.	Fish & Fruit shops.	Food Hawkers' premises.	Jam factor- ies.	Pickle factor- ies	Food factories	Knackers yards.	Total Visits Paid
5,758	30,100	31,629	30,758	3,162	64	60	438	113	102,082

Seventy-one samples of foodstuffs were obtained for bacteriological and analytical examination, including fish, shellfish, meat, fruit and tinned food. The following foodstuffs were condemned as unfit for human food, viz. :—Beef, mutton and lamb, 761,319 lbs. ; wet and dry fish, 280,551 lbs. ; mussels, cockles and winkles, 95 packages ; crabs, lobsters, crayfish and prawns, 3,761 lbs. ; poultry, 2,830 head ; game, 128 head ; rabbits, 4,095 head ; fruit, 451,447 lbs. ; vegetables, 167,875 lbs. ; tinned foodstuffs, 13,596 tins ; eggs, 625 ; egg pulp, 14 lbs.

### DAIRIES, COWSHEDS AND MILKSHOPS.

There has been no change in the method of procedure respecting the licensing of cowsheds, and the registration of dairies, milkshops and milkstores during the year.

The statistics relating to the newly incorporated areas of Croxteth Park and West Derby Rural have been combined with those of the city.

The Milk Acts and Orders are being satisfactorily carried out. The progress made as regards the hygiene of cowsheds and dairies, the production, cooling and handling of milk is maintained: this is due to systematic and regular observations and the educational propaganda work of the department. Suggestions made by the inspectors are welcomed by the trade and are generally accepted and adopted.

The bottling of milk is decidedly on the increase: this system of milk delivery which was introduced by the larger dairymen and the up-to-date cowkeeper is now slowly being adopted by the smaller members of the trade. It provides additional security against contamination both during distribution and in the home of the consumer.

The transport of milk by road is increasing: the use of motor vehicles now enables the milk to be collected at the farm and delivered direct to the dairy. Additional advantages are as follow—the farmer has his empty churns returned direct to the farm—the dairyman is saved the expense of collecting the milk at the railway station and the risk of contamination is materially reduced.

Approximately 60 per cent. of the milk brought into Liverpool is conveyed by road transport.

The milk supply of Liverpool is :—

Milk produced from 3,947 cows kept in the city	= 11,841 galls. per day.	
,, outside the city—road transport	= 17,237	,,
,,, ,, rail transport	= 11,357	,,

STATISTICS RESPECTING COWSHEDS.

Number of applications to keep cows on premises not previously						<u>1928</u>
licensed	...	...	...	...	...	25
„ „ granted	...	...	...	...	...	6
„ „ in abeyance	...	...	...	...	...	19
„ cows applied for...	...	...	...	...	...	369
„ „ granted	...	...	...	...	...	112
„ applications for transfer to fresh tenants of cowsheds						
previously licensed	...	...	...	...	...	8
„ „ granted	...	...	...	...	...	8
„ „ to keep additional stock	...	...	...	...	...	6
„ „ granted	...	...	...	...	...	6
„ additional cows applied for	...	...	...	...	...	61
„ „ granted	...	...	...	...	...	61
„ cowsheds on the register 31st December, 1928	...	...	...	...	...	276
„ cows licensed to be kept within the city area	...	...	...	...	...	4,854

COWSHED INSPECTION.

					<u>1927.</u>	<u>1928.</u>
Number of inspections of cowsheds	...	...	...	...	1,700	2,114*
„ found incorrect	...	...	...	...	59	58†

Thirty-nine notices were issued to occupiers directing their attention to minor contraventions, which were at once complied with—prosecutions being unnecessary.

The number of cowsheds in the city during the years 1924 to 1928, inclusive, together with the number of cows licensed to be kept, and the number of applications for new cowsheds, are shewn in the following table :—

Years		Cowsheds		Cows		Applications.
1924	...	291	...	4,832	...	3
1925	...	286	...	4,830	...	2
1926	...	279	...	4,727	...	2
1927	...	273	...	4,723	...	2
1928	...	276	...	4,854	...	25‡

\* From December 15th, 1928, to January 17th, 1929, no visits were made to cowsheds owing to an outbreak of Foot and Mouth Disease.

† Premises undergoing alterations in the newly added districts included.

‡ Incorporation of Croxteth Park and West Derby Rural,

MILKSHOPS.

			<u>1927.</u>		<u>1928</u>
Number of new applications for registration	...		15	...	46
„ transfers „	„	„	79	...	81
Total number of „	„	„	102	...	127
Number of applications granted	...	...	94	...	100
„ „ withdrawn	...	...	7	...	8
„ „ in abeyance	...	...	1	...	19
Number of milkshops on the register at the end of 1924...				...	790
„ „ „ „			1925...	...	787
„ „ „ „			1926...	...	797
„ „ „ „			1927...	...	790
„ „ „ „			1928...	...	808

DAIRIES AND MILKSHOPS.

				<u>1927.</u>	<u>1928.</u>
Number of inspections of dairies and milkshops	...			5,884	7,232
„ found incorrect	...	...	...	52	65*

Forty-six caution notices were issued to occupiers of milkshops for minor contraventions, which were at once complied with—prosecutions being unnecessary.

PURVEYORS OF MILK.

In addition to the registered milkshops there are 106 registered purveyors of milk, who, having no dairies of their own, are registered at the dairy from which their milk is obtained, and where their cans and utensils are stored.

Routine visits are paid to these purveyors at their homes, in the streets, and they are also checked at the wholesalers' dairies at which they are registered.

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\* Premises undergoing alterations in the newly added districts included.

Designations.	Veterinary examination and certificate to Licensing Authority.	Tuberculin testing and production of certificate.	New animals.	Reacting Animals and diseased animals.	Register, marking and isolation of animals.	Bottling of milk.	Regarding seals.	Bacteriological standards.
"Certified" ...	3 monthly.	6 monthly.	To be tuberculin tested before adding to herd.	Removed or not added and report to Licensing Authority <i>re</i> disposal.	Keeping of Register and marking of animals is compulsory. Herd to be isolated.	Bottled immediately and sealed with disc and cap with name and address, date, and designation	Seal to be unbroken on delivery.	Not over 30,000 bacteria per c.c. nor any colon bacilli in 1/10th c.c. on sample before delivery.
Grade "A"— Tuberculin tested ...	Ditto.	ditto.	ditto.	ditto.	ditto.	ditto, or same as Grade "A" below	Same as for Grade "A" below.	
Grade "A" ...	3 monthly for producers.	—	—	Diseased or tubercular animals to be removed	Ditto.	May be bottled or in unventilated sealed containers, labelled and marked with address, date and designation.	Except where delivered as stated in sealed containers, it shall be delivered in bottles or containers of not less than 2 gallons capacity sealed with disc and cap with name of dealer and bottling establishment, also date and designation.	Not over 200,000 bacteria per c.c. nor any colon bacilli in 1/100 c.c. on sample before delivery.
Grade "A"— "Pasteurised" ...	Grade "A" milk that, after pasteurisation, as required by the Ministry of Health, contains not more than 30,000 bacilli per cubic centimetre and no coliform bacillus in 1/10 c.c. All other conditions as required for Grade "A" milk.							
"Pasteurised"	Milk to be retained at a temperature of not less than 145° and not more than 150° Fahr. for at least half-an-hour, and immediately cooled to a temperature of not more than 55° Fahr. 1. The milk shall not be so heated more than once. 2. The type of apparatus used and methods employed shall be satisfactory to Licensing Authority. 3. Suitable labels to be attached with date and designation.							
	Not more than 100,000 bacteria per c.c.							

MILK (SPECIAL DESIGNATIONS) ORDER, 1923.

Although the order has been in force since 1923, the quantity of designated milk sold has been small, but has materially increased during the year under review.

To produce “graded milk” a considerable amount of initial expenditure is entailed, especially for the production of the “tubercle-free milk.” In comparison the price of designated milk is higher than that of ordinary (bulk) milk; and until such time as the price is reduced the demand for graded milk will be relatively small, as unfortunately the fact that one milk is dearer than another is the only circumstance considered by the average person, and the difference in the quality is frequently ignored.

It is hoped that by educating public opinion on this matter, the value of the higher grade article will be recognised; and in time increase the public demand for this wholesome and nutritious food.

During the past year there has been an increase in the quantity of “graded milk” supplied to Liverpool, as the following figures show:—

PRODUCERS.						1926	1927.	1928.
No. of Producers supplying “Certified”	...	...	...			3	5	6
„ „ „ “Grade A” T.T.	...	...	...			None	5	13
„ „ „ “Grade A”	...	...	...			1	2	22
BOTTLEERS.								
No. of Vendors licensed to bottle “Grade A” T.T.	...					None	1	2
„ „ „ “Grade A”	...	...	...			1	1	3
VENDORS.								
No. of Vendors licensed to sell “Certified”	...	...	...			6	10	10
„ „ „ “Grade A” T.T.	...	...	...			3	4	8
„ „ „ “Grade A”	...	...	...			1	2	13

ICE CREAM MAKERS AND VENDORS.

Systematic inspections have been made of the premises utilised by street traders solely for manufacturing ice cream.

The dwellings which these street traders occupy have also been kept under observation, and in no instance during the past year has it been found that ice cream has been made or stored in or about these dwellings.

A systematic inspection has also been made of shopkeepers' premises which are used for the manufacture or sale of ice cream.

		<u>1927</u>		<u>1928.</u>
Number of premises under inspection ...	...	1,155	...	1,168
„ visits made ...	...	2,459	...	2,927
„ caution notices issued ...	...	15	...	14

PIGGERIES.

There were fifty-one applications involving the keeping of 2,885 pigs made during the year.

In eight cases a transfer of licence was applied for and granted; the other forty-three being new applications. Sixteen of these have been granted and thirty-five are still under consideration.

Forty-two of the applications are for premises in the added area of Croxteth and West Derby Rural—the majority of these premises are situated in open country in which pigs can be kept without infringement of the requirements.

There are now within the city area as extended 143 premises where 3,246 pigs are licensed to be kept. The approximate number of pigs kept is 3,216.

587 visits of inspection to piggeries were made during the year.

## TUBERCULOSIS AND THE MILK SUPPLY.

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The two principal aspects of milk supervision which concern the department are (*a*) the prevention of tuberculosis arising from milk from infected cattle, and (*b*) to ensure the supply to the public of a clean, wholesome milk, free from dirt and other contamination.

For convenience of consideration the milk supply to the city may be divided into two classes—(i) that produced from cows within the city, and (ii) that coming from farms outside the city boundary.

The following information of the work of the department during the year has been extracted from the report kindly supplied by the Chief Veterinary Officer:—

In Liverpool, the machinery for detection of cases of tuberculosis of the udder among city-housed cows is threefold. (*a*) Routine veterinary examination of all cows. (*b*) The requirement upon owners or their private veterinary surgeons to notify suspicious abnormalities of the udder for attention. (*c*) The taking of samples of milk from the general supply for bacteriological examination. The first two of these are interdependent, inasmuch as education of milk producers inevitably accompanies examination of their cattle, and also the knowledge, that such examination is impending, causes increased care. During the last three years routine examination and notification have been responsible for the detection of over 90 per cent. of cases of tuberculous mastitis known to have existed in the city, while bulk sampling has revealed less than 10 per cent.

Two-thirds of the milk supply is produced outside the city, and the only means of control available at present is the taking of numerous samples from bulk for bacteriological examination. There is no reason to suppose that this system is more efficient in the case of country-produced than of city-produced milk, so that it can be argued that less than 10 per cent. of tuberculous country milk will be detected.

A fair estimate of the incidence of tuberculous mastitis in adult dairy stock is between 0·5 and 1 per cent. per annum. The number of cows and heifers “in milk” or “in calf” in Great Britain in June, 1927, is returned as 3,251,020. At the lowest estimate there were probably 16,255

cases of tuberculous mastitis during the year among these cattle. The actual number dealt with officially under the Tuberculosis Order is given as 2,239. In other words six out of seven cases escaped detection, and the nature of the disease is such that their milk is likely to have been included in public supplies for considerable periods. These facts emphasise the need of routine veterinary examination.

The following is a table of the veterinary examination of cows in the city cowsheds, together with the figures for the previous five years for comparison :—

Year.	No. of Visits to Cases notified by Owners.	No. of Routine and other Visits.	Total Visits.	No. of Cows Examined.	No. of Cows with Tuberculosis of the Udder.
1923	6	124	130	1,189	15 or 0·81%
1924	17	697	714	8,949	26 or 0·28%
1925	63	717	780	11,161	21 or 0·18%
1926	48	777	825	10,515	20 or 0·19%
1927	59	880	939	12,148	19 or 0·15%
1928	54	796	850	10,613	25 or 0·23%

The supervision of the general hygiene and statutory sanitary requirements is conducted by an inspector of the department, who reports an improvement. 1,502 routine visits were made, and 73 special visits to supervise disinfection of premises from which diseased cattle had been removed.

Five official notices were served on occupiers of premises requiring them to remedy certain faults or carry out necessary repairs.

During the year twenty-five cases of tuberculosis of the udder were detected among city cattle, in addition to various other forms of scheduled diseases. Of the twenty-five udder cases, fourteen were found during routine clinical examination, nine were reported as suspect by the respective owners, one resulted from a bulk sample of milk taken by the Medical Officer of Health's department being tuberculous, and one was detected on post-mortem examination.

Of fifty-four cows notified by the owners or their veterinary surgeons, as suspected, nine proved to have tuberculosis of the udder, and eight tuberculosis in other notifiable forms.

Of 258 samples of milk taken by the Medical Officer of Health's department, eight were referred to the Chief Veterinary Officer as tuberculous, consequent examination of the involved herds resulting in the detection of one case of tuberculosis of the udder. In the remaining seven cases, the supplies were proved to be non-tuberculous on the day of the examination of the herd, showing that the diseased animal had been removed or that the contamination had ceased.

A number of cattle was also dealt with under the Tuberculosis Order of 1925 as suffering from reportable forms of the disease other than in the udder.

#### MILK PRODUCED OUTSIDE THE CITY.

Since 1st September, 1926, the onus of taking action where infected country milk is involved has been placed upon the authority of the producing district by the operation of the Milk and Dairies (Consolidation) Act, 1915.

The detection of infected supplies rests with the Medical Officer of Health, who causes samples from bulk to be taken as the milk comes into the city.

Infected samples are reported to the Medical Officer of the county of origin, whose duty it is to arrange for suitable investigation at the source.

The Chief Veterinary Officer has made a practice of being present at first examinations of suspected herds, but as the work is done by the county officers no complete table of statistics can be shown, as was formerly done.

During the year, 22 such visits have been made to premises situated in the counties of Cheshire (11), Lancashire (2), Shropshire (2), Flint (2), Denbigh (3). The figures in parenthesis show the number of farms involved in each county, two of the farms being tuberculous on two occasions.

## THE DISEASES OF ANIMALS ACTS, 1894 TO 1927.

THE TUBERCULOSIS ORDER OF 1925.

Under this order, certain forms of bovine tuberculosis are notifiable by owner and veterinary surgeons. Its object is to eliminate such tuberculos cattle as are dangerous to the health of human beings or to other cattle by spreading infection. Many cattle are infected with tuberculosis in such a form as not to be an immediate source of infection to others or a direct danger to human health. Such are not included within the order.

The owners of cattle which are notified and slaughtered under the order are compensated, the scale being three-quarters of the market value for a case being found on post-mortem not to be advanced, and one-quarter for animals which are found on post-mortem to be advanced within the meaning of the order.

Seventy-five per cent. of the above payments in compensation are borne by the Ministry of Agriculture and Fisheries, the remaining 25 per cent. being paid by the local authority. The latter amount, however, is, in most cases, counter-balanced by the sum received for salvage. Since the introduction of the order there has been a credit balance to the city each year.

The following table shows the number of animals dealt with during 1928, and the form in which they were diseased :—

Total No. of Animals Examined.	Number Slaughtered.	No. with Tuberculosis of Udder.	No. giving Tuberculous Milk.	No. with Tuberculous Emaciation.	No. with Chronic Cough with definite signs of Tuberculosis.
624	38	23	—	2	13
				£ s. d.	£ s. d.
Total Value of Animals Slaughtered ... ..					372 10 0
Amount of Compensation paid to Owners ... ..					202 15 0
Amount of above refunded by Ministry ... ..				152 1 3	
Amount of Salvage Recovered ... ..				77 10 2	
Credit Balance to Local Authority ... ..					26 16 5
				£229 11 5	£229 11 5

The carrying out of the order involves a considerable amount of work devoted to microscopical diagnosis, post-mortem examinations and disinfection of premises.

In addition to the regulations under this order, the Chief Food Inspector notifies the Veterinary Department whenever a cow from Liverpool premises is found on slaughter to have a tuberculous lesion. The stall is then thoroughly disinfected. During the year 73 visits were paid for this purpose.

### BACTERIOLOGICAL EXAMINATION OF MILK.

From January to December, 1928, 488 samples of milk from sources outside the city were submitted for bacteriological examination, and 34 of the samples were found to be contaminated by tubercle bacilli, this being equal to 6·9 per cent.

During the same period 258 samples of milk from town cowkeepers were submitted for bacteriological examination, and 8 of the samples were found to be contaminated by tubercle bacilli, this being equal to 3·1 per cent.

The following tables give particulars relating to the samples taken and result of examination, together with the number of cows examined :

TABLE RELATING TO COUNTRY SAMPLES.

Year.	Samples from bulk.			Farms affected.
	No. taken.	Tubercular.	Percentage Tubercular.	
1923 ... ..	593	62	10·45	36
1924 ... ..	549	57	10·38	25
1925 ... ..	482	36	7·46	29
1926 ... ..	449	34	7·57	36
1927 ... ..	523	24	4·58	21
1928 ... ..	488	34	6·96	22

TABLE RELATING TO TOWN SAMPLES.

Year.	Samples from Bulk.		
	Number taken.	Tubercular.	Percentage Tubercular.
1923 ... ..	309	19	6·14
1924 ... ..	232	22	9·48
1925 ... ..	211	8	3·80
1926 ... ..	234	13	5·55
1927 ... ..	253	10	3·95
1928 ... ..	258	8	3·1

ADMINISTRATION OF FOOD AND DRUGS ACT.

A section of the staff supervises the composition and purity of foods and drugs under the above Act and under Regulations issued from time to time by the Ministry of Health.

The object of this supervision is to ensure that food is free from adulteration, is of the nature, substance and quality demanded by the purchaser, and contains no chemical or other preservative which is dangerous to health. The latter is controlled by the Public Health (Preservatives in Food) Regulations.

Samples of foods and drugs are purchased in shops in accordance with the routine laid down in the Act, and great care is exercised in procuring these samples.

In practice, a large number of "informal" samples have been taken during the year, these are those taken without any intimation to the vendor that the samples are to be analysed. This practice is valuable—it gives intimation as to sources of fraud, but no action is taken until a sample has been purchased "officially"—it saves time and trouble, and causes little annoyance to honest shopkeepers.

In order to consolidate the Acts dealing with the adulteration of food and drugs, an Act was passed entitled the Food and Drugs (Adulteration) Act, 1928, which incorporates the main provisions of several Acts dealing with foods, including margarine and butter.

FOOD AND DRUGS (ADULTERATION) ACT, 1928.

This Act, which came into operation on January 1st, 1929, is a consolidation of several Acts of Parliament which dealt with the adulteration of food and drugs.

Enumerated below are the Acts which have been wholly or partially repealed :—

ENACTMENTS REPEALED.

SHORT TITLE.	EXTENT OF REPEAL.
The Sale of Food and Drugs Act, 1875.	The whole Act, except sections thirty, thirty-one, and thirty-six.
The Sale of Food and Drugs Act Amendment Act, 1879.	The whole Act.
The Margarine Act, 1887.	The whole Act.
The Sale of Food and Drugs Act, 1899.	The whole Act.
The Butter and Margarine Act, 1907.	The whole Act.
The Milk and Dairies (Consolidation) Act, 1915.	Section nine and the Third Schedule.
The Finance Act, 1921.	Section twenty-three.
The Licensing Act, 1921.	Section ten.
The Sale of Food and Drugs Act, 1927.	The whole Act.

DETAILS OF SAMPLES OF MILK OBTAINED FOR CHEMICAL ANALYSIS.

	1927.	1928.
Number of samples purchased on week-days in town ...	1,167	1,129
„ informations ... ..	17	23
„ samples taken at railway stations on week-days ... ..	1,108	780
„ informations ... ..	15	7
„ samples purchased on Sundays in town ...	144	185
„ informations ... ..	4	11
„ samples taken at railway stations on Sundays	84	74
„ informations ... ..	0	1
„ samples taken at city hospitals ... ..	197	253

	1927.	1928
Number of informations ... ..	0	0
„ samples taken at Corporation infant welfare centres and day nurseries ... ..	343	371
„ informations ... ..	0	0
„ samples taken at other institutions ... ..	447	319
„ informations ... ..	0	3
„ samples taken at wholesale milk depots ... ..	—	459
„ informations ... ..	—	2

#### MARGARINE ACT.

Number of visits to wholesale dealers in margarine ...	29	56
„ visits to shops ... ..	2,986	3,398
„ visits to other places ... ..	1,631	820

#### PUBLIC HEALTH (MILK AND CREAM) REGULATIONS, 1912 AND 1917.

Report for the year ending 31st December, 1928.

Number of samples examined for the presence of a preservative :—

Milk, 3,570; cream, 65.

Number in which a preservative was reported to be present :—

(a) Milk .. .. .	0
(b) Cream ... .. .	0

#### SPECIAL EXAMINATIONS.

The total number of samples submitted during 1928 for special examination was 40.

#### POISONS AND PHARMACY ACT, 1908.

The Poisons and Pharmacy Act, 1908, came into operation on the 1st April, 1909.

The object of the act is to regulate the sale of certain poisonous substances, and to amend the Pharmacy Acts. It is fully referred to in the annual report for 1909.

The number of licenses issued under this act during the year 1928 was 24.

SALE OF FOOD AND DRUGS ACTS.

SUMMARY OF OFFENCES UNDER SALE OF FOOD AND DRUGS ACTS FOR YEAR ENDING 1928.

No. of Infor- mations.	Nature of Sample.	Nature of Offence.	RESULT OF LEGAL PROCEEDINGS.					Costs.
			No. of con- vic- tions.	Discharged on payment of costs.	Dismissed without costs.	Fines.		
19	Milk .....	Adulterated with water .....	11	8	—	£ s. d. 14 0 0	£ s. d. 25 14 6	
24	" .....	Deficient in milk-fat .....	14	10	—	33 0 0	29 8 0	
1	" .....	Deficient in milk-fat and coloured with Annatto .....	1	—	—	0 10 0	1 1 0	
2	" .....	Coloured with Annatto .....	2	—	—	1 10 0	2 2 0	
2	" .....	Adulterated with water and coloured with Annatto .....	1	—	1	15 0 0	1 1 0	
1	" .....	Adding separated milk to milk .....	—	1	—	—	0 4 0	
1	" .....	For aiding and abetting, adding separated milk to milk .....	1	—	—	2 0 0	1 1 0	
1	" .....	Refusing to sell .....	1	—	—	5 0 0	—	
1	Ground Cinnamon .....	Containing 7.3% of sand and siliceous matter	—	—	1	—	—	
1	" .....	Supply False Warranty .....	1	—	—	—	10 10 0	
1	Olive Oil .....	Devoid of olive oil and consisted of oil of the nature of sunflower-seed oil .....	1	—	—	—	1 1 0	
54			33	19	2	£71 0 0	£72 2 6	

Summary of Samples submitted for analysis from January 1st to December 31st, 1928,  
and other statistical details.

INFORMAL SAMPLES.				FORMAL SAMPLES.				
Number taken.	Number genuine.	Adulterated.		Number taken.	Number genuine.	Adulterated.		Number cautions.
		Sch'dule A.	Sch'dule B.			Sch'dule A.	Sch'dule B.	
2	2	—	—	7	7	—	—	—
—	—	—	—	139	137	2	—	2
56	56	—	—	—	—	—	—	—
26	26	—	—	—	—	—	—	—
73	73	—	—	513	513	—	—	—
6	6	—	—	8	8	—	—	—
29	29	—	—	23	23	—	—	—
7	7	—	—	52	52	—	—	—
49	48	1	—	—	—	—	—	—
5	5	—	—	119	118	1	—	1
4	4	—	—	16	16	—	—	—
141	141	—	—	60	60	—	—	—
				Nature of Sample.				
				Arrowroot.....				
				Barley .....				
				Beer and Stout .....				
				Bread .....				
				Butter .....				
				Cake flour .....				
				Cheese .....				
				Cocoa .....				
				Condensed milk .....				
				Coffee and mixtures .....				
				Corn flour .....				
				Confectionery .....				

SUMMARY OF SAMPLES, &c.—Continued.

INFORMAL SAMPLES.				FORMAL SAMPLES.						
Number taken.	Number genuine.	Adulterated.		Nature of Sample.	Number taken.	Number genuine.	Adulterated.		Number caut'nd.	Informations.
		Sch'dule A.	Sch'dule B.				Sch'dule A.	Sch'dule B.		
21	19	—	2	Condiments and spices .....	178	157	10	11	3	2
—	—	—	—	Cream of tartar .....	39	38	—	1	—	—
63	63	—	—	Cream .....	2	2	—	—	—	—
11	11	—	—	Custard powder .....	8	8	—	—	—	—
14	14	—	—	Dripping and Compound .....	17	17	—	—	—	—
29	29	—	—	Dried fruits .....	16	16	—	—	—	—
69	69	—	—	Drugs .....	1	1	—	—	—	—
2	2	—	—	Egg substitute powder .....	—	—	—	—	—	—
4	4	—	—	Flour.....	36	35	—	1	—	—
—	—	—	—	Ground almonds .....	41	41	—	—	—	—
12	11	—	1	Honey .....	—	—	—	—	—	—
82	76	4	2	Jam, jellies and marmalade .....	59	59	—	—	2	—
15	15	—	—	Lard and Compound .....	140	140	—	—	—	—

INFORMAL SAMPLES.				Nature of Sample.	FORMAL SAMPLES.				
Number taken.	Number genuine.	Adulterated.			Number taken.	Number genuine.	Adulterated		Number caut'nd.
		Sch'dule A.	Sch'dule B.			Sch'dule A.	Sch'dule B.		
22	22	—	—	Lemon cheese and Curd.....	—	—	—	—	—
156	156	—	—	Margarine.....	49	49	—	—	—
898	872	20	6	Milk.....	2672	2416	174	82	97
—	—	—	—	Do. skimmed .....	7	7	—	—	—
—	—	—	—	Do. sterilised .....	8	8	—	—	—
—	—	—	—	Do. butter .....	3	3	—	—	—
5	5	—	—	Oatmeal and preparations.....	42	42	—	—	—
9	5	—	4	Rice and ground rice .....	280	239	2	39	10
2	2	—	—	Self-raising flour .....	87	87	—	—	—
3	3	—	—	Sugar.....	77	77	—	—	—
27	27	—	—	Syrup and treacle .....	—	—	—	—	—
2	2	—	—	Tapioca .....	60	60	—	—	—
18	18	—	—	Temperance beverages .....	26	24	2	—	2

SUMMARY OF SAMPLES, &c.—continued.

INFORMAL SAMPLES.				Nature of Sample.	FORMAL SAMPLES.				
Number taken.	Number genuine.	Adulterated.			Number taken.	Number genuine.	Adulterated.		Number Infor- mations.
		Sch'dule A.	Sch'dule B.			Sch'dule A.	Sch'dule B.		
17	16	—	1	Tinned and Potted Meats .....	13	13	—	—	—
38	34	—	4	Tinned fish .....	4	4	—	—	—
38	33	—	5	Tinned fruits .....	—	—	—	—	—
6	5	1	—	Vinegar .....	4	4	—	—	—
—	—	—	—	Wines and spirits .....	28	28	—	—	—
200	190	8	2	Miscellaneous .....	275	264	9	2	1
2161	2100	34	27		5109	4773	200	136	54

TOTAL NUMBER OF SAMPLES TAKEN=7,270.

## ARTIFICIAL CREAM ACT, 1929.

The act will come into operation on the 1st day of June, 1929, and gives the definition of artificial cream as “an article of food resembling cream and containing no ingredient which is not derived from milk except water or any ingredient or material which by virtue of the proviso to sub-section (2) of section two of the Food and Drugs (Adulteration) Act, 1298, may lawfully be contained in an article sold as cream.”

Section (2) gives power to the Food and Drugs Authority to register premises where artificial cream is manufactured or sold.

There are also special requirements regarding the labelling of the receptacle used for the conveyance of artificial cream.

## FERTILISERS AND FEEDING STUFFS ACT, 1926.

On 1st July, 1928, the Fertilisers and Feeding Stuffs Act, 1926, which replaced the old Act of 1906, came into operation.

Under it the City Analyst was appointed official agricultural analyst, the Chief Food and Drugs Inspector was appointed Inspector, and the three Food and Drugs Inspectors were appointed official samplers.

A certain remuneration was agreed to in respect of the work done under the Act.

Total number of samples submitted during the following five years 1294 to 1928 :—

1924	...	...	...	...	...	...	61
1925	...	...	...	...	...	...	30
1926	..	...	...	...	...	...	52
1927	...	...	...	...	...	...	45
1928	...	...	...	...	...	...	69

## RAG FLOCK ACTS, 1911 AND 1928.

There is one factory in which rag flock is manufactured in this district. Four visits have been made and two samples of rag flock have been taken, which were not in accordance with the standard of cleanliness required by the rag flock regulations, the owner being cautioned. Three places were visited where rag flock was used and three samples were taken, two of which were in accordance with the regulations, the other not being up to standard. The manufacturer was cautioned.

## REPORT OF THE CITY BACTERIOLOGIST, 1928.

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During the year 1928, 35,938 specimens were examined for the Public Health, Port Sanitary, Water and Baths and Wash houses departments, as compared with 33,654 for the year 1927. These specimens may be grouped as follows:—

1. Milk and other foodstuffs.
2. Water.
3. Rats, etc., for possible infection with the bacillus of plague.
4. Material from infectious diseases in man—(Diphtheria, Vincent's Angina, Typhoid Fever, Tuberculosis, etc.).
5. Venereal diseases.
6. Material from animals with suspected infection.
7. Other specimens.

The following samples have been examined:—

### MILK AND OTHER FOODSTUFFS.

(i) Fresh Milks—

City Hospitals and other Institutions	...	...	198
Maternity and Child Welfare Institutions	...	...	453
Milk Shops, Railway Stations, etc.	...	...	465
		—	1,116
(ii) Tinned Milks	...	...	15
(iii) Other foodstuffs—Shell-fish, tinned and potted meats, etc.	...	...	23
			<hr style="width: 50px; margin-left: auto; margin-right: 0;"/> 1,154 <hr style="width: 50px; margin-left: auto; margin-right: 0;"/>

(i) *Fresh Milks*.—City Hospitals: Of the 198 samples examined, 60 shewed no evidence of *B. coli* in 1 c.c., 22 contained *B. enteritidis sporogenes* in 10 c.c., 2 contained streptococci, and *B. tuberculosis* was found in 11 samples. A bacterial count was also done in 86 of these samples.

*Maternity and Child Welfare Institutions*.—Of the 453 samples examined, 239 shewed no evidence of *B. coli* in 1 c.c., 18 contained *B. enteritidis sporogenes* in 10 c.c., and *B. tuberculosis* was found in 1 sample. A bacterial count was done in 367 samples.

*Milk Shops, Railway Stations, etc.*—Of the 465 samples examined 115 shewed no evidence of *B. coli* in 1 c.c., 59 contained *B. enteritidis* sporogenes in 10 c.c., 8 contained streptococci, and *B. tuberculosis* was found in 27 samples. A bacterial count was done in 57 of these samples.

Thus, in 1,116 samples of milk, 39 were found to be infected with *B. tuberculosis*. This, at first sight, seems a large proportion, but many of the samples were in duplicate or triplicate, and it is impossible to draw any conclusions from these figures as to the percentage of tuberculosis in the milk supply of the city.

(ii) *Tinned Milks.*—Of the 15 samples of tinned milks examined, 10 were sterile, and the remainder shewed no organisms of the food-poisoning group.

(iii) *Other foodstuffs.*—There were 23 samples of other foodstuffs

(a) Tinned and potted meats, etc.	...	...	7
(b) Shell-fish	...	...	11
(c) Watercress	...	...	5

None of these samples call for any special comment.

#### WATER.

There were 388 samples of water examined, viz. :—

For the Water Engineer—

Daily samples	...	...	...	...	...	304
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Monthly samples—

Prescot—Vyrnwy	...	...	...	...	...	12
----------------	-----	-----	-----	-----	-----	----

Rivington	...	...	...	...	...	12
-----------	-----	-----	-----	-----	-----	----

George Holt Well	...	...	...	...	...	11
------------------	-----	-----	-----	-----	-----	----

John Holmes Well	...	...	...	...	...	10
------------------	-----	-----	-----	-----	-----	----

Dudlow Lane	...	...	...	...	...	8
-------------	-----	-----	-----	-----	-----	---

—	53
---	----

Special samples—

Rivington and district	...	...	...	...	17
------------------------	-----	-----	-----	-----	----

Street hydrants and other local sources	...	...	14
---	-----	-----	----

—	31
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388

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At one period of the year a high *B. coli* content was found in the monthly samples, and in searching for the cause, the tap through which monthly samples were drawn at Rivington inlet, Prescott, was examined, and a piece of old washer was found inside the tap which shewed very numerous *Colon bacilli*. After the removal of this, the contamination disappeared.

The water throughout the year, whether from the wells or from Prescott, was, from a bacterial standpoint, satisfactory.

#### RATS, ETC.

During the year, 1,729 rats from warehouses, etc., within the city were examined, and no evidence of the bacillus of plague was found in any of them.

#### MATERIAL FROM INFECTIOUS DISEASES IN MAN.

##### (a) Swabs from suspected cases of Diphtheria:—

	Posi- tive.	Doubt- ful.	Nega- tive.	Total.
City hospitals ... ..	909	3	9,506	10,418
Maternity and child welfare institutions ... ..	8	1	95	104
Private practitioners, etc. ...	407	1	1,752	2,160
	<hr/>	<hr/>	<hr/>	<hr/>
	1,324	5	11,353	12,682
	<hr/>	<hr/>	<hr/>	<hr/>

##### (b) Swabs from suspected cases of Vincent's Angina:—

	Posi- tive.	Nega- tive.	Total.
City hospitals ... ..	66	47	113
Private practitioners, etc. ... ..	19	20	39
Maternity and child welfare institutions	—	1	1
	<hr/>	<hr/>	<hr/>
	85	68	153
	<hr/>	<hr/>	<hr/>

## (c) Blood from suspected cases of Typhoid Fever :—

	Positive.	Negative.	Total.
City hospitals ... ..	49	76	125
Private practitioners, etc. ... ..	10	29	39
Maternity and child welfare institutions	—	2	2
	<hr/>	<hr/>	<hr/>
	59	107	166
	<hr/>	<hr/>	<hr/>

## (d) Urine and faeces from suspected cases of Typhoid Fever :—

	Positive.	Negative.	Total.
City hospitals ... ..	18	389	407
Private practitioners, etc. ... ..	1	9	10
	<hr/>	<hr/>	<hr/>
	19	398	417
	<hr/>	<hr/>	<hr/>

## (e) Sputa, etc., from suspected cases of Tuberculosis :—

	Positive.	Negative.	Total.
City hospitals and other institutions ...	12	155	167
Maternity and child welfare institutions	1	14	15
Private practitioners, etc. ... ..	250	1,227	1,477
	<hr/>	<hr/>	<hr/>
	263	1,396	1,659
	<hr/>	<hr/>	<hr/>

(f) Anthrax Infection.—44 specimens of tissues, swabs, etc., were examined, chiefly for the city hospitals, and *B. anthracis* was found in three cases.

(g) Vaccines.—Four vaccines were prepared from specimens sent from the city hospitals.

(h) Miscellaneous.—912 specimens of tissues, secretions, fluids and other specimens were examined, chiefly for the city hospitals, and maternity and child welfare institutions, etc.

#### VENEREAL DISEASES.

The following specimens have been examined from persons known, or suspected, to be suffering from venereal diseases :—

	Positive.	Doubtful.	Negative.	Total.
<b>Clinics -</b>				
Wassermann reactions ... ..	1,099	39	3,370	4,508
For Gonococci ... ..	51	4	523	578
	1,150	43	3,893	5,086
<b>Hospitals, Private Practitioners, &amp;c.</b>				
Wassermann reactions ... ..	1,116	24	3,123	4,263
For Gonococci ... ..	131	44	513	688
For Spirochoetes ... ..	—	—	5	5
Still-born infants ... ..	2	1	266	269
For ophthalmia neonatorum ...	13	6	35	54
	1,262	75	3,942	5,279
	<b>2,412</b>	<b>118</b>	<b>7,835</b>	<b>10,365</b>

As the majority of these specimens were sent from patients suspected to be suffering from syphilis, or undergoing treatment, several specimens of blood may have been sent from one case at different times, and therefore no percentages as to positive and negative results can be obtained from these figures.

In the cases of still-born infants examined, those giving positive evidence of syphilis represent less than 1 per cent.

The cases of ophthalmia neonatorum shewing positive evidence of gonococci amount to over 24 per cent.

#### MATERIAL FROM ANIMALS WITH SUSPECTED INFECTION.

For Tuberculous infection:—Of the 23 specimens of tissues, etc., examined, 9 were tubercular, and 14 shewed no evidence of infection.

For Anthrax infection:—There were 51 samples of shaving brushes, bristles, tissues, etc., examined. Only one specimen of Bull tissue shewed evidence of Anthrax infection.

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Figure 1

## CLEANSING AND SCAVENGING.

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The City Engineer has kindly supplied the following information, which indicates the operations carried out by the cleansing staff under his control :—

The work of the department consists of cleansing and watering the 655 miles of streets within the city, together with their back passages, the periodical emptying of ashbins, street gullies, street and court bins and ashpits, and the disposal of the refuse collected therefrom, etc. During 1928 the quantity of domestic and trade refuse collected and received was approximately 362,800 tons, and the quantity disposed of was approximately 420,587 tons, the latter figure including 39,800 tons of clinker residue and fluedust from destructors. The quantity dealt with per working day was 1,370 tons.

The whole of the 655 miles of streets with their passages, with the exception of a few on the outskirts of the city, are swept weekly, the principal streets, and streets in congested areas, receiving constant daily attention. In addition, certain streets and passages are washed by hose pipe. During 1928 street washing was carried out as follows :—

38 streets washed once a week ;

1 street washed three times a week ;

1 street washed daily ; and

158 streets washed as occasion required.

Four motor sweeping machines are employed regularly, and sweep approximately 30 miles of roadway nightly.

On Sunday mornings a number of the principal streets and streets in congested areas are cleansed, and certain streets and court bins emptied.

During 1928 approximately 53,000 tons of street sweepings were collected and disposed of as manure and top dressing.

In connection with street watering upwards of 10 million gallons of water were distributed during the season, in addition to the large quantity used for street washing.

934,334 square yards of carriageway were treated with dust-laying compositions, of which 42,232 square yards were in Sefton and Newsham Parks.

The frequent flushing of trough water closets is a sanitary measure, this type of closet being provided principally in the more densely populated areas of the city. The number of trough water closets in existence on 31st December, 1927, was 633.

There are 35 underground urinals with 323 stalls and 144 overground urinals with 551 stalls in Liverpool, which are cleansed and disinfected at least once daily. During the summer season a large number of urinals and trough water closets are cleansed and disinfected twice daily. All private, domestic and office drains are flushed twice a year by the City Engineer's staff.

An improved type of fixture ash-bin was first supplied to Liverpool premises in 1898, and at the end of 1928 the number of bins in use of this type was 86,900, and the number of ashpits has been reduced from 65,000 to approximately 5,800. In addition, more than 80,000 loose bins had been supplied. In the year 1900 an improved sanitary ashbin was introduced for the use of courts, some of which have been removed owing to property being demolished. The number in use at the end of the year was 1,324, which are emptied daily. Ashbins and ashpits at domestic premises are emptied approximately once weekly. The Bell-Cart service provides for the daily removal of domestic refuse from shops, business premises, and dwelling-houses, where no provision can conveniently be made for the storage of this description of refuse.

#### ASHPITS.

To assist in the abolition of ashpits within the city, the Health Committee applied for and obtained special powers under the Liverpool Corporation Act, 1927, Section 157, which are as follows:--

Section 467 (Regulation Dustbins) of the Act of 1921 is hereby repealed and the Corporation may by notice in writing require the owner or occupier of any dwelling-house, warehouse or shop to provide and maintain in proper order and condition galvanized

iron dust-bins in lieu of ash-pits or ash-tubs or other portable receptacles for refuse, and such bins shall be of such size and construction as may be approved by the Corporation, and any owner or occupier who fails within fourteen days after notice given to him to comply with the requirements of the Corporation shall for every such offence be subject to a penalty not exceeding five shillings. Provided that in any case where the Corporation under this Section require a galvanized iron dust-bin to be provided in lieu of any ash-pit or ash-tub or other portable receptacle for refuse in use on the 4th day of August, 1905, which at the time such requirements is made is of suitable size and construction and in good order and condition the Corporation shall pay the cost of providing such galvanized iron dust-bin.

Several applications have already been received by owners who desire to take advantage of this section of the provisions. Up to 31st December, 1928, 46 ash-pits had been abolished under these powers.

Horse middens are emptied weekly, and oftener if required, and abattoir garbage is removed nightly, 4,630 tons of abattoir garbage being removed during 1928.

All ashpits and ashbin refuse is emptied direct into the carts and motors, and all loaded carts and motors traversing the streets are covered.

The refuse collected is disposed of by burning at four destructors, by disposing at sea, by sale to farmers, and by tipping for reclamation of land, operations being carried out in accordance with suggested regulations of the Ministry of Health.

During the year 114,438 tons were burned at the destructors, 50,027 tons were deposited at sea by hopper barge, 26,111 tons were sold to farmers, and 199,521 tons were otherwise disposed of at tips and for agricultural purposes, etc. In addition, approximately 30,500 tons of clinker residue from destructors were used almost entirely in the construction and maintenance of roads, tramways and in the manufacture of mortar and concrete slabs, etc.

## HOUSING.

### REMOVAL OF INSANITARY PROPERTY.

The following summary indicates the number of houses which have been dealt with from the year 1865 to 1928 (inclusive) :—

Date	Powers	Approximate number of houses dealt with
1865 to 1904	The Liverpool Sanitary Amendment Act, 1864. ... ..	6,300
1905 to 1927	HOUSING ACTS.	
	(a) Unhealthy Areas (23)... ..	2,966
1906	(b) As the result of a Circular Letter directing the Owner's attention to the insanitary condition of the property ... ..	1,020
1906 to 1928	(c) Closing Orders ... ..	1,760

In addition to the above, a large number of insanitary houses have been demolished by owners for the purpose of private improvement.

### CLOSING ORDERS.

In view of the shortage of dwellings no Closing Orders were made under the Housing Acts during the years 1916 to 1920 and 1922 to 1928 (inclusive).

During the year 1921, Closing Orders were made in regard to certain houses in Quarry Street area, which were referred to in the Report for 1925.

### HOUSING ACT, 1925.

The approximate number of insanitary houses existing on the 1st January, 1929 (including added areas) was as follows :—

Number of courts ... ..	253
Number of court houses ... ..	1,362
Approximate number of front houses contiguous to court houses ... ..	506

## PITT STREET AREA.

On March 19th, 1926, the Ministry of Health made a Confirmation Order in respect to the compulsory purchase of the properties on this area.

Plans have been approved for the erection of 57 tenements on this site and 18 of the number have been completed and occupied, and the remainder are nearing completion.

## BEAU STREET AREA (Confirming Order, 23rd October, 1908.)

The land and premises on this area have been acquired and all the property demolished.

In view of the proposed new road the question of rebuilding on a portion of the area has been in abeyance. Meanwhile, the vacant land is let at short tenancies.

## PRINCE EDWIN STREET AREA. (Confirming Order 10th October, 1924.)

Sixty tenements have been erected, and are all occupied.

## RATHBONE STREET AREA. (Confirming Order dated 1st August, 1913.)

At the present time all the property on this area is in possession of the Corporation. The houses have been demolished with the exception of 23 houses, of which 16 are occupied, and 7 unoccupied and derelict.

## SALTNEY STREET AND DUBLIN STREET AREAS. (Confirming Order dated 10th October, 1924.)

With regard to Saltney Street, all the houses are occupied, and the only change since the date of the Order is the demolition of eight houses which became in a dangerous condition.

With regard to Dublin Street, twelve houses have been purchased by the City Council and improved by the provision of through ventilation, yard space, bath, sanitary conveniences, and water supply. An arrangement has been made to acquire the remaining houses, and when the purchase is completed they may also be improved and rendered sanitary.

BLLENHEIM STREET AREA. (Confirming Order dated 10th October, 1924.)

On this area the City Council has erected twenty-four tenements, but there still remains to be dealt with the property fronting St. Augustine Street and Silvester Street, a total of forty-eight houses. Of this number ten are in possession of the Corporation.

BURLINGTON STREET, HOPWOOD STREET, GT. RICHMOND STREET AND  
RANKIN STREET AREAS.

BURLINGTON STREET AREA. (Confirming Order dated 11th January, 1924.)

Twenty-four tenements have been erected by the City Council on the site of the old school in Bond Street. There still remain to be dealt with 302 houses included in the scheme. Of this number thirty are in possession of the Corporation.

GT. RICHMOND STREET, RANKIN STREET AND HOPWOOD STREET AREAS.

With the exception of eleven houses remaining to be purchased, the whole of the property on the Hopwood Street area has been acquired.

With regard to Gt. Richmond Street and Rankin Street areas all the properties have been acquired, and the question of erecting new tenements is under consideration.

### UNOCCUPIED HOUSES.

In 1927, a return was submitted to the Health Committee of the number of unoccupied houses within the city. No further return has been submitted since this date.

### CELLAR DWELLINGS.

In 1908 the special legislation obtained by the Health Committee in regard to cellar dwellings in the city, provided that after the 31st day of December, 1912, it shall not be lawful to let or occupy or permit to be occupied as a separate dwelling any room or place whereof the floor of any part thereof is more than two feet below the surface of the adjacent ground.

In 1909 a circular letter was issued to owners of all cellar dwellings directing attention to the above provision.

In December, 1912, the whole of the cellar dwellings in the city were inspected, and a record made indicating how they were used.

The following table indicates the position in 1912 and 1926 :—

Number of cellars found occupied as separate dwellings,						
December, 1912	...	...	...	...	...	1,614

The present position in regard to these cellars is as follows :—

Number at present unoccupied	...	...	...	585
Number occupied as kitchen or wash-cellars	...			496
Number occupied as a kitchen and separately let with the front parlour	...	...	...	115
Number permanently closed...	...	...	...	285
Number demolished	...	...	...	10
Number of cellars occupied as separate dwellings,				
31st December, 1927	...	...	...	123

### PROVISION OF DWELLINGS.

The real barrier in regard to the removal of insanitary houses within the city is the question of replacing the persons who may be dispossessed. The Ministry of Health have already approved of the reports of the Medical Officer of Health in regard to certain unhealthy areas, but in each case, a clause is inserted in the Confirming Order to the effect that any unoccupied houses on the unhealthy areas shall not be demolished, until accommodation for the number of persons equivalent to the number of working-class occupants in each house is available in new dwellings erected by the Council unless the Council are satisfied that suitable alternative accommodation for such occupants is available elsewhere.

### NEW DWELLINGS IN SUBURBS.

In the year 1919 the Housing Committee commenced to erect houses in the suburbs, and up to the present 17,432 houses and 169 flats have been completed, and 747 houses are in progress of erection.

The following table gives details relating to the districts where these houses have been erected, and the accommodation provided.

		“ A ” (Non-parlour)	“ B ” (Parlour)	Totals
Elms House Estate ...	...	252	—	252
Larkhill Estate ...	...	476	1,730	2,206
Fazakerley Estate ...	...	503	275	778
Edge Lane Drive Estate ...	...	560	311	871
Walton-Clubmoor Estate ...	...	1,439	1,507	2,946
Springwood ...	...	224	1,247	1,471
Partly developed Estates ...	...	—	554	554
Woolton ...	...	48	—	48
Knotty Ash ...	...	268	125	393
Highfield Estate ...	...	—	618	618
Pinehurst Road Estate ...	...	281	375	656
King Street, etc., Garston ...	...	76	—	76
Ronald Street ...	...	78	—	78
Norris Green Estate ...	...	4,011	2,474	6,485
		8,216	9,216	17,432

All these dwellings are completed and occupied.

At Larkhill and Springwood Estate 120 and 49 flats, respectively, have also been erected.

During the same period, 6,451 houses have been erected by private enterprise, and of these 3,554 were eligible for subsidy under the Housing Act of 1923. There is, however, an urgent demand for dwellings of this character.

The difficulty in regard to the removal of insanitary houses in the more congested part of the city has been partly removed by the proposal to erect 260 tenements in Melrose Road, and 198 tenements in South Hill Road, Dingle.

The Melrose Road tenements are in course of erection and those at South Hill Road, Dingle, are completed and occupied.

#### RE-HOUSING IN OLD CITY AREA.

The number of dwellings provided by the Corporation up to the present is 3,259 ! their situations and dates of opening are as follows :—

Situation.	Date opened.	Number of tenements. (Including houses with shops attached)
St. Martin's Cottages .....	1869	124
Victoria Square .....	1885	270
Juvenal Dwellings .....	1891	101
Arley Street .....	1897	46
	1902/3)	
Gildart's Gardens .....	1897	229
	1904	
Dryden Street .....	1901	182
Kempston Street .....	1902	79
Kew Street .....	1902/3	114
Adlington Street Area .....	1902/3	273
Stanhope Cottages .....	1904	60
Mill Street .....	1904	55
Hornby Street .....	1904	454
	1906/7	
Clive Street and Shelley Street .....	1905	83
Eldon Street .....	1905	12
Upper Mann Street .....	1905/6	88
Combermere Street .....	1909	49
Burlington Street .....	1910	114
Saltney Street .....	1911	48
Grafton Street .....	1911	60
Bevington Street Area .....	1912	224
Northumberland Street Area .....	1913	68
St. Anne Street Area .....	1914	77
Gore Street .....	1916	24
Jordan Street .....	1916	31
Sparling Street .....	1916	16
Penrhyn Street .....	1921	26
Mason Street .....	1921	28
Blenheim Street .....	1923	18
Prince Edwin Street .....	1924	60
St. Augustine Street .....	1925	6
Bond Street .....	1925	24
Pitt Street .....	1928	18
South Hill Road .....	1928	198
Total .....	—	3,259

## DESCRIPTION OF TENEMENTS.

Number of 1-roomed dwellings ...	193
Number of 2-roomed dwellings ...	1,459
Number of 3-roomed dwellings ...	1,289
Number of 4-roomed dwellings ...	318
	3,259

Number of self-contained dwellings (included in above)	133
Number of lock-up shops ...	15

## RENTALS.

The rentals of the tenements vary from 2s. 8d. to 11s. 9d., and those of the self-contained cottages from 8s. 10d. to 10s. 5½d. per week.

CORPORATION TEMEMENTS.

(Old City Area.)

VITAL STATISTICS.

Comparative Tables.

ALL DWELLINGS.

Population, 1923	...	...	...	13,597
Population, 1924	...	...	...	13,775
Population, 1925	.	...	...	13,786
Population, 1926	...	...	...	14,312
Population, 1927	...	...	...	14,437
Population, 1928	...	...	...	14,713

	1923.		1924.		1925.		1926.		1927.		1928.	
	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.
Births .....	475	34.93	450	32.66	476	34.52	508	35.49	445	30.82	466	31.67
Deaths .....	242	17.79	226	16.40	258	18.71	258	17.32	256	17.73	257	17.46
Infantile Mortality .....	60	126.31 per 1,000 Births.	59	131.11 per 1,000 Births.	61	128.15 per 1,000 Births.	75	147.63 per 1,000 Births.	56	125.84 per 1,000 Births.	47	100.85 per 1,000 Births.
Deaths under 1 year												
Phthisis .....	28	2.05	22	1.59	22	1.59	29	2.02	27	1.87	26	1.76



(Old City Area.)

# VITAL STATISTICS.

## Comparative Tables.

**UNRESTRICTED DWELLINGS.**

Population, 1923	...	...	...	...	2,081
Population, 1924	...	...	...	...	2,085
Population, 1925	...	...	...	...	2,103
Population, 1926	...	...	...	...	2,107
Population, 1927	...	...	...	...	2,100
Population, 1928	...	...	...	...	2,133

	1923.		1924.		1925.		1926.		1927.		1928.	
	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.
Births .....	69	33·15	86	41·24	77	36·61	76	36·07	65	30·95	88	41·25
Deaths .....	31	14·89	33	15·82	40	19·02	33	15·66	34	16·19	48	22·50
Infantile Mortality .....	9	130·43 per 1,000 Births.	8	93·02 per 1,000 Births.	10	129·87 per 1,000 Births.	8	105·26 per 1,000 Births.	7	107·69 per 1,000 Births.	11	125·00 per 1,000 Births.
Deaths under 1 year .....												
Phthisis .....	5	2·40	6	2·87	1	0·47	4	1·89	5	2·38	4	1·87

**CORPORATION TENEMENTS.**

(Old City Area.)

**VITAL STATISTICS.**

Statistics as to Birth Rate and Infantile Mortality Rate in Corporation Dwellings as a whole for the five years 1924 to 1928 :—

Year	Birth Rate per 1,000 of population	Infantile Mortality. Deaths under 1 year per 1,000 births.
1924.....	32·66	131·1
1925.....	34·52	128·15
1926 .....	35·49	147·63
1927.....	30·82	125·84
1928.....	31·67	100·85

**ALL DWELLINGS.**

Average Birth Rate for the 5 years 1924 to 1928	...	...	33·03
Average Death Rate for the 5 years 1924 to 1928	...	...	17·52
Average Infantile Mortality Rate (under 1 year) 1924 to 1928			126·71
Average Phthisis Death Rate for the 5 years 1924 to 1928	...		1·76

**HOUSING ACT, 1295.****SECTION 3.**

Statistics for year ending 31st December, 1298.

Number of dwelling-houses inspected...	...	1,405
Number of defects found	... ..	13,525
Number of Notices issued	... ..	1,378

In the majority of cases (with the exception of a few minor defects) the work has been carried out by the owners. A reference has been sent to the Town Clerk, and Acting-Director of Housing, in respect to the outstanding defects.

RETURN REQUIRED BY MINISTRY OF HEALTH,  
YEAR ENDED 31ST DECEMBER, 1928.

GENERAL STATISTICS.

Area (acres) ... ..	24,772
Population ... ..	866,000
Number of inhabited houses ... ..	181,387
Number of families, or separate occupiers (1921 Census) ... ..	173,823
Rateable value ... ..	£7,016,916
Sum represented by a Penny Rate ... ..	£25,800

HOUSING.

Number of New Houses erected during the year :—

(a) Total ... .. 3,264

(b) With State Assistance under the Housing Acts 1923 and 1924 :—

(i) By the Local Authority ... .. 2,339

(ii) By other bodies or persons ... .. 298

1. UNFIT DWELLING-HOUSES.

Inspection—

- (1) Total number of dwelling-houses inspected for housing defects (under Public Health or Housing Acts) ... .. 117,801
- (2) Number of dwelling-houses which were inspected and recorded under the Housing (Inspection of District) Regulations, 1910 ... .. 117,801
- (3) Number of dwelling-houses found to be in a state so dangerous or injurious to health as to be unfit for human habitation ... .. 1,868
- (4) Number of dwelling-houses (exclusive of those referred to under the preceding sub-heading) found not to be in all respects reasonably fit for human habitation ... .. Nil.

## 2. REMEDY OF DEFECTS WITHOUT SERVICE OF FORMAL NOTICES.

Number of defective dwelling-houses rendered fit in consequence of informal action by the Local Authority or their Officers ... ..	Nil.
--	------

## 3. ACTION UNDER STATUTORY POWERS.

A.—*Proceedings under Section 3 of the Housing Act, 1925.*

(1) Number of dwelling-houses in respect of which notices were served requiring repairs... ..	1,378
(2) Number of dwelling-houses which were rendered fit :—	
(a) by owners ... ..	669
(b) Referred to Town Clerk and Acting-Director of Housing for proceedings to be taken ... ..	446
(3) Number of dwelling-houses in respect to which Notices were served and were not due to be re-inspected ... ..	263

B.—*Proceedings under Public Health Acts.*

(1) Number of dwelling-houses in respect of which notices were served requiring defects to be remedied ... ..	42,873
(2) Number of dwelling-houses in which defects were remedied—	
(a) by owners ... ..	42,873
(b) by Local Authority in default of owners..	Nil.

C.—*Proceedings under Sections 11 to 15 of the Housing Act, 1925.*

(1) Number of representations made with a view to the making of Closing Orders ... ..	Nil.
(2) Number of dwelling-houses in respect of which Closing Orders were made ... ..	Nil.
(3) Number of dwelling-houses in respect of which Closing Orders were determined, the dwelling-houses having been rendered fit... ..	Nil.
(4) Number of dwelling-houses in respect of which Demolition Orders were made ... ..	Nil.
(5) Number of dwelling-houses demolished in pursuance of Demolition Orders ... ..	Nil.

## CITY BUILDING SURVEYOR'S DEPARTMENT.

## RETURN OF HOUSES ERECTED, 1924-1928.

NUMBER OF ROOMS, (Exclusive of Bathrooms, Sculleries, &c.)	1924	1925	1926	1927	1928
4 Rooms or less ... ..	14	13	3	1	103
5 or 6 Rooms ... ..	479	1,298	4,599	7,115	3,024
7 or 8 Rooms ... ..	265	333	225	173	136
9 or 10 Rooms ... ..	10	3	11	6	—
More than 10 Rooms ... ..	—	—	—	—	1
Totals ... ..	768	1,647	4,838	7,295	3,264

The numbers of houses which have been erected by or for the Housing Committee and which form parts of Government-assisted schemes during the last five years, are :—

1924 = 88.

1925 = 491.

1926 = 3,102.

1927 = 5,728.

1928 = 2,440.

RESIDENTIAL FLATS.—During 1928, 15 houses have been altered into 51 self-contained residential flats, giving a nett increase of 36 “houses” not included in the above table.

NUMBER OF HOUSES ERECTED AND TAKEN DOWN  
DURING THE YEAR ENDING DECEMBER, 1928.

DISTRICTS.						Number Erected.	Number Taken Down.
Exchange	...	...	...	...	...	—	40
Abercromby	...	...	...	...	...	—	41
Everton	...	...	...	...	...	—	28
Kirkdale	...	...	...	...	...	—	1
Edge Hill	...	...	...	...	...	16	1
Toxteth	...	...	...	...	...	102	102
Walton	...	...	...	...	...	137	3
West Derby	...	...	...	...	...	508	95 *
Wavertree	...	...	...	...	...	339	4
Toxteth (East)	...	...	...	...	...	—	—
Fazakerley	...	...	...	...	...	74	3
Woolton	...	...	...	...	...	107	1
Norris Green	...	...	...	...	...	1,981	3
Totals						3,264	323

\* Includes 84 hut-dwellings (originally Army huts) at Knotty Ash Encampment.

Of the 3,264 dwelling-houses erected during 1928, 2,440 were built under the direction of the Housing Department, these forming parts of Government-assisted schemes, and including 101 tenement dwellings.

# METEOROLOGY.

The Director to the Liverpool Observatory and Tidal Institute, Bidston, has kindly furnished the following tables relating to Meteorological observations made by him at the Observatory, Bidston :—

Latitude 53° 24' N. Longitude 3° 4' W.

Height above the Mean Level of the Sea 202 feet.

1928.	Barometer. Mean.	Temperature. Mean.	RAINFALL.		Mean Humidity of the air (Complete Saturation equal 100).
			Amount.	No. of days on which .01 in. or more fell.	
	Inches.	Degrees.	Inches.		
January .....	29·770	42·3	4·728	24	82
February .....	29·997	42·9	2·018	14	77
March .....	29·703	42·7	1·183	17	78
April .....	29·785	47·9	1·175	12	69
May .....	29·960	51·8	1·476	10	68
June .....	29·879	54·8	4·185	17	73
July .....	30·061	59·0	1·738	12	77
August .....	29·884	59·2	3·337	17	80
September .....	30·119	55·3	1·244	13	79
October .....	29·825	50·8	3·417	20	87
November .....	29·720	46·1	3·443	21	92
December .....	30·009	39·7	2·042	16	93

DIFFERENCE FROM THE AVERAGE QUANTITIES OBSERVED DURING THE  
LAST 62 YEARS.

1928.	BAROMETER.		TEMPERATURE.		RAINFALL.	
	Above Average.	Below Average.	Above Average.	Below Average.	Above Average.	Below Average
	Inches.	Inches	Degrees.	Degrees.	Inches.	Inches.
January .....	...	0.160	2.5	...	2.626	...
February .....	0.082	...	2.4	...	0.245	...
March .....	...	0.179	0.6	...	...	0.641
April .....	...	0.115	1.2	...	...	0.462
May .....	...	0.004	...	0.4	...	0.537
June .....	...	0.114	...	2.5	2.152	...
July .....	0.112	...	...	1.4	...	0.978
August .....	...	0.131	...	0.7	...	0.203
September .....	0.154	...	...	0.8	...	1.557
October.....	...	0.106	1.1	...	0.101	...
November .....	...	0.172	2.3	...	0.906	...
December.....	0.156	...	...	0.9	...	0.657

OBSERVATIONS OF VELOCITY OF WIND.

1928.	Average Hourly Velocity for Month.	Maximum Hourly Velocity.	Date.	Minimum Hourly Velocity.	Dates.
	Miles.	Miles.		Miles.	
January .....	22.6	72	Jan. 6	0	January 1, 17.
February....	23.8	75	Feb. 11	0	February 19, 21.
March.....	13.8	34	Mar. 29	0	March 2, 4, 6, 7, 13, 24, 26, 30.
April .....	14.2	40	April 14	0	April 11, 12, 16, 21, 22, 26, 27, 28, 30.
May .....	11.8	40	May 16	0	May 1, 2, 7, 9, 14, 17, 20, 23, 24, 27, 28.
June .....	15.9	43	June 26	0	June 3, 4, 6, 7, 8, 12, 14, 18, 20, 21, 25, 26
July .....	15.0	40	July 6	0	July 7, 14, 15, 21, 22, 23, 26, 30, 31.
August .....	12.5	38	Aug. 20	0	August 1, 2, 5, 10, 17, 22, 24, 27, 29, 30, 31
September..	10.4	34	Sept. 6	0	Sept. 1, 2, 11, 12, 14, 16, 21, 23, 26, 30.
October.....	...	...	...	...	} Osler Anemometer dismantled.
November...	...	...	...	...	
December...	...	...	...	...	

The Corporation of Liverpool makes yearly donations to the Royal Society for the Prevention of Cruelty to Animals, Liverpool Branch, and to the Liverpool Dogs' Home on account of work done by those institutions, and the following brief extracts from their reports are, therefore, of interest.

#### LIVERPOOL CATS' SHELTERS.

(Three depôts, namely, 41, Russell Street; 90, Smith Street, Kirkdale; 230, Mill Street, Toxteth.)

The total number of animals dealt with during 1928 was 28,311, this being a decided increase over the number recorded for the previous year. Included in this figure are the animals which were brought from private houses by the Home's van, on the express request of their owners, these being about one-third of the total. Every animal received is spontaneously handed to the society and all are recorded in the books of the shelters. Almost 10,000 out of the above figure were in a state of disease or injury, and it needs no argument to stress the point that the provision of prompt and humane methods for the removal of this enormous number of unwanted animals is beneficial to the whole community. Included in the above total are 209 cats which were kept as boarders for longer or shorter periods and afterwards returned to their owners. There is a resident caretaker at all the above depôts. Requests for the removal of an unwanted cat should be directed to the Caretaker at 41, Russell Street.

#### LIVERPOOL HORSES' REST, BROAD GREEN.

The number of animals grazing for periods varying from a few days to several months totalled 92 in 1928, being the largest annual figure yet recorded. Practically every one of these animals had come from the hands of a working class owner, and in a few cases a loan animal was provided, so that the owner's business should not be hindered while his own animal was recovering health. The pressure on the accommodation was so great towards the end of the year that some extension of stabling is to be embarked upon. There is a resident keeper on the premises.

#### LIVERPOOL ANIMALS' HOSPITAL, LARCH LEA, AND MILL STREET.

This Hospital, the Animals' War Memorial for Liverpool, recorded 2,627 attendances during 1928, and just after the conclusion of the year to which this report refers, namely, in January, 1929, hospital work was

commenced at the new Branch Cats' Shelter, 230, Mill Street. The attendances are actually carried out by qualified veterinary surgeons acting in a purely honorary capacity, and only those animals are treated whose owners cannot afford to pay fees.

All the above institutions are conducted by the R.S.P.C.A., Liverpool Branch, 3, Crosshall Street, Liverpool. Telephone : Central, 645.

#### LIVERPOOL'S DOGS' HOME.

The year 1928 saw the largest total of dogs dealt with at the home which has yet been recorded, namely, 11,665. Of these 665 were restored to their owners, 810 were sold to fresh homes, 644 were boarded, and the remainder, namely, 9,546, were humanely lethalised. A considerable number of the latter were collected by request of their owners from their homes throughout the city and district, and it is well worth pointing out that the facilities for the humane lethalising of unwanted animals are availed of to such an extent that the number of dogs which are sent to the home direct by their owners year by year is larger than the number brought off the streets by the police of the city. This means that the possible stray population is enormously reduced through the facilities provided by the Liverpool Dogs' Home. Two motor vans are employed in the collecting of dogs, one for lost dogs, many of which are later restored to their owners, and the other for unwanted dogs, all of which have to be destroyed. The separating of these two classes of dogs is done for the express purpose of minimising the risk of infection to the animal which may still lead a useful existence. The keeper resides on the premises, and the telephone number is : Old Swan, 1340.

## A

The following tables I, II, III, IV, and marked also A, B, C, D, are prepared pursuant to an instruction of the Ministry of Health.

## CITY OF LIVERPOOL.

TABLE I.

## VITAL STATISTICS OF WHOLE DISTRICT DURING 1928 AND PREVIOUS YEARS.

YEAR.	Population estimated to Middle of each year.	BIRTHS.			TOTAL DEATHS REGISTERED IN THE DISTRICT.		TRANSFERABLE DEATHS. ‡		NETT DEATHS BELONGING TO THE DISTRICT.			
		Uncor-rected Number.	Nett.		Number. *	Rate.	of Non-residents registered in the District.	of Resi-dents not registered in the District.	Under 1 year of age.		At all ages.	
			Number.	Rate.					Number. *	Rate per 1000 Nett Births. 11	Number. *	Rate.
1	2	3	4	5	6	7	8	9	10	11	12	13
1923.....	829881	20630	20695	24·9	11715	14·1	724	414	2058	99	11405	13·7
1924.....	836396	20560	20559	24·6	11813	14·1	792	369	2113	103	11390	13·6
1925.....	842968	19587	19592	23·3	12391	14·7	898	409	1935	99	11902	14·1
1926.....	849593	19869	19792	23·3	12191	14·3	937	372	2066	104	11626	13·7
1927.....	856266	19175	19020	22·2	12443	14·4	975	406	1781	94	11874	13·9
1928.....	866000	19374	19120	22·1	12009	13·8	998	421	1789	94	11432	13·2

NOTES.—This Table is arranged to show the gross births and deaths registered in the district during the calendar year, and the births and deaths properly belonging to it with the corresponding rates. The rates should be calculated per 1,000 of the estimated gross population as stated in Column 2, without the use of the standardising factor for the district given in the Annual Report of the Registrar-General. In a district in which large Public Institutions for the sick or infirm seriously affect the Statistics, the rates in Columns 5 and 13 may be calculated on a nett population, obtained by deducting from the estimated gross population the average number of inmates not belonging to the district in such institutions.

\* In Column 6 are included the whole of the deaths registered during the calendar year as having actually occurred within the district.

In Column 12 is entered the number in Column 6, corrected by subtraction of the number in Column 8 and by addition of the number in Column 9. Deaths in Column 10 are similarly corrected by subtraction of the deaths under 1, included in the number given in Column 8, and by addition of the deaths under 1 included in the number given in Column 9.

‡ “Transferable Deaths” are deaths of persons who, having a fixed or usual residence in England or Wales, die in a district other than that in which they resided. The deaths of persons without fixed or usual residence, *e.g.*, casuals, are not included in Columns 8 or 9, except in certain instances under 3 (b) below. In Column 8 the number of transferable deaths of “non-residents” are deducted, and in Column 9 the number of deaths of “residents” registered outside the district are added in calculating the net death-rate of the district.

The following special cases arise as to Transferable Deaths :—

(1) Persons dying in Institutions for the sick or infirm, such as hospitals, lunatic asylums, workhouses, and nursing homes (but not almshouses) must be regarded as residents of the district in which they had a fixed or usual residence at the time of admission. If the person dying in an Institution had no fixed residence at the time of admission, the death is not transferable. If the patient has been directly transferred from one such institution to another, the death is transferable to the district of residence at the time of admission to the first Institution.

(2) The deaths of infants born and dying within a year of birth in an Institution to which the mother was admitted for her confinement should be referred to the district of fixed or usual residence of the parent.

(3) Deaths from violence are to be referred (a) to the district of residence, under the general rule ; (b) if this district is unknown, or the deceased had no fixed abode, to the district where the accident occurred, if known ; (c) failing this, to the district where death occurred, if known ; and (d) failing this, to the district where the body was found.

Area of District in acres  
(land and inland  
water) } 24,772.

Total population at all ages.....805,046 } At Census  
Total families or separate occupiers ...172,029 } of  
1921



TABLE II.  
CITY OF LIVERPOOL.

Cases of Infectious Disease notified during the Year 1928.

NOTIFIABLE DISEASE	NUMBER OF CASES NOTIFIED.							
	At all Ages.	At Ages—Years.						
		Under 1	1 to 5.	5 to 15.	15 to 25.	25 to 45.	45 to 65.	65 and upwards.
Small-pox ... ..	...	...	...	...	...	...	...	...
Measles ... ..	...	...	...	...	...	...	...	...
Diphtheria (and Croup)...	1902	28	527	982	238	118	9	...
Erysipelas ... ..	623	9	20	52	78	173	218	73
Scarlet fever ... ..	2193	31	610	1305	173	64	10	...
Typhus fever ... ..	...	...	...	...	...	...	...	...
Enteric fever ... ..	30	...	1	3	11	11	4	...
Interperal fever ... ..	51	...	...	...	13	38	...	...
Do. Pyrexia... ..	141	...	...	...	47	92	2	...
Cerebro-Spinal Fever ... ..	21	7	4	2	6	2	...	...
Otitis Myelitis and Polioencephalitis ... ..	6	1	4	...	...	1	...	...
Ophthalmia Neonatorum ... ..	545	545	...	...	...	...	...	...
Pulmonary Tuberculosis ... ..	2468	12	81	407	568	849	486	65
Tuberculosis other than Pulmonary ... ..	648	11	148	247	129	85	24	4
Anthrax ... ..	7	...	...	...	2	3	1	1
Measles and German Measles ... ..	6025	418	2861	2605	141	...	...	...
Pneumonia and Influenzal Pneumonia ... ..	2864	403	941	462	274	383	309	92
Malaria ... ..	77	...	...	...	20	42	10	5
French Fever ... ..	...	...	...	...	...	...	...	...
Dysentery .. ..	4	...	...	...	...	4	...	...
Encephalitis Lethargica... ..	54	...	1	11	12	19	9	2
Totals ... ..	17659	1465	5198	6076	1712	1884	1082	242

City Hospital North, Netherfield Road.  
 " " South, Grafton Street.  
 " " East, Mill Lane, Old Swan.  
 " " Fazakerley Isolation.  
 " " do. Annexe.  
 " " Sparrow Hall, Fazakerley.  
 Sanatorium, Fazakerley.  
 " Broadgreen.

All within the City.

All the above Institutions are provided by the Corporation of Liverpool.



TABLE III.  
CITY OF LIVERPOOL.  
Causes of, and ages at, Death during the Year 1928.  
(See notes at back.)

C

Causes of Death	NETT DEATHS AT THE SURJOINED AGES OF "RESIDENTS" WHETHER OCCURRING WITHIN OR WITHOUT THE DISTRICT (a).									Total Death whether of "Residents" or "non-Residents" in Institutions in the District (b)
	All ages.	Under 1 year.	1 and under 2 years.	2 and under 5 years.	5 and under 15 years.	15 and under 25 years.	25 and under 45 years.	45 and under 65 years.	65 and upwards.	
1	2	3	4	5	6	7	8	9	10	11
All causes (Certified (c) .....	11347	1764	643	394	364	575	1306	2862	3439	6191
(Uncertified .....	85	25	1	—	2	—	4	14	39	4
1. Enteric Fever .....	4	—	—	—	—	2	—	2	—	3
2. Small-pox .....	—	—	—	—	—	—	—	—	—	—
3. Measles .....	177	40	95	36	6	—	—	—	—	130
4. Scarlet Fever .....	19	—	4	7	5	2	1	—	—	20
5. Whooping Cough .....	269	108	105	56	—	—	—	—	—	182
6. Diphtheria and Croup .....	100	10	16	39	33	1	1	—	—	96
7. Influenza .....	99	5	2	2	5	6	13	33	33	10
8. Erysipelas .....	22	1	—	1	1	—	2	7	10	18
9. Phthisis (Pulmonary Tuberculosis) ...	1021	7	9	12	37	244	387	283	42	547
10. Tuberculous Meningitis .....	78	7	16	21	18	10	3	3	—	70
11. Other Tuberculous Diseases .....	100	7	7	11	23	18	15	16	3	60
12. Cancer, malignant disease. ....	1100	—	1	—	3	7	95	559	435	613
13. Rheumatic Fever .....	85	—	—	1	20	17	21	17	9	41
14. Meningitis (See note (d)) .....	62	25	9	6	7	6	7	1	1	48
15. Organic Heart Disease.....	915	—	—	2	9	41	94	368	401	412
16. Bronchitis .....	932	142	37	11	7	4	42	209	480	337
17. Pneumonia (all forms).....	1419	402	210	109	68	42	140	266	182	727
18. Other diseases of Respiratory organs	137	4	1	1	2	9	22	51	47	47
19. Diarrhoea and Enteritis. (See note (e))	347	282	65	—	—	—	—	—	—	241
20. Appendicitis and Typhlitis .....	47	—	—	—	9	13	10	9	6	61
21. Cirrhosis of Liver .....	14	—	—	—	—	—	—	13	1	16
21a. Alcoholism .....	2	—	—	—	—	—	—	1	1	2
22. Nephritis and Bright's Disease .....	361	—	3	5	3	11	42	163	134	238
23. Puerperal Fever .....	19	—	—	—	—	1	18	—	—	19
24. Other accidents and diseases of Pregnancy and Parturition .....	45	—	—	—	—	3	42	—	—	39
25. Congenital Debility and Malformation, including Premature Birth .....	516	501	6	2	7	—	—	—	—	218
26. Violent Deaths, excluding Suicide ...	304	12	16	26	46	31	58	65	50	197
27. Suicide .....	80	—	—	—	—	6	27	34	13	13
28. Other Defined Diseases .....	3141	236	42	46	57	101	268	770	1621	1785
29. Diseases, ill-defined or unknown .....	17	—	—	—	—	—	2	6	9	5
Totals .....	11432	1789	644	394	366	575	1310	2876	3478	6195
Sub-Entries included in above figures—										
Cerebro-Spinal Meningitis .....	16	7	—	3	3	3	—	—	—	18
Poliomyelitis & Polioencephalitis .....	5	2	1	1	—	—	1	—	—	5
*Encephalitis Lethargica .....	24	—	—	1	4	6	3	8	2	16
*Pneumonia .....	582	60	37	28	38	28	111	186	94	285
Anthrax ..	2	—	—	—	—	—	—	2	—	—

(8a) Entries should here be made for other deaths which it is desirable to distinguish, on account of their administrative importance or special interest (e.g. any deaths from Anthrax, Typhus or Glanders, which have been included under 28, *Other Defined Diseases*; or deaths from pneumonia other than broncho pneumonia which have been included under 17, *Pneumonia all forms*.)

## NOTES TO TABLE III.

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The classification and numbering of Causes of Death are those of the "Short List" on page XXV. of the Manual of the International List of Causes of Death, which has been consulted and followed in all cases of doubt.

- (a) All "Transferable Deaths" of residents, *i.e.*, of persons resident in the District who have died outside it, are *included* with the other deaths in Columns 2-10. Transferable deaths of non-residents, *i.e.*, of persons resident elsewhere in England and Wales who have died in the District, are in like manner *excluded* from these columns. For the precise meaning of the term "transferable deaths" *see* footnote to Table I.

The total deaths in Column 2 of Table III. equal the figures for the year in Column 12 of Table I.

- (b) All deaths occurring in institutions for the sick and infirm situated within the district, whether of residents or of non-residents, are entered in the last column of Table III.
- (c) All deaths certified by registered Medical Practitioners and all Inquest cases are classed as "Certified"; all other deaths are regarded as "Uncertified."
- (d) Exclusive of "Tuberculous Meningitis" (10), but inclusive of Cerebro-Spinal Meningitis.
- (e) Title 19 has been used for deaths from Diarrhœa and Enteritis of children under 2 years of age. (In the "Short List" deaths from Diarrhœa, and Enteritis under 2 years are included under Title 19; those at 2 years and over being placed under Title 28.)



#### NOTES TO TABLE IV.

- (a) The total in the last column of Table IV. should equal the total in column 10 of Table I., and in column 3 of Table III.
  - (b) Under Abdominal Tuberculosis are to be included deaths from Tuberculous Peritonitis and Enteritis and from Tabes Mesenterica.
  - (c) The total deaths from Congenital Malformations, Premature Birth, Atrophy, Debility and Marasmus, should equal the total in Table III. under the heading Congenital Debility and Malformation, including Premature Birth.  
  
Want of Breast Milk is included under Atrophy and Debility.
  - (d) For references to the meaning of any other headings, *see* notes attached to Table III.
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In recording the facts under the various headings of Tables I., II., III. and IV., attention has been drawn to the notes on the Tables.

LIVERPOOL

FAZAKERLEY

B.R. 24.3  
D.R. 6.9  
I.M. 85  
Pop. 8.1

WALTON

B.R. 16.3  
D.R. 11.3  
I.M. 81  
Pop. 47.5

KIRKDALE

B.R. 23.7  
D.R. 14.0  
I.M. 107  
Pop. 92.5

BOOTLE

WEST DERBY

B.R. 19.3  
D.R. 11.5  
I.M. 79  
Pop. 32.5

EVERTON

B.R. 25.5  
D.R. 14.7  
I.M. 91  
Pop. 171.0

EXCHANGE

B.R. 31.5  
D.R. 19.2  
I.M. 141  
Pop. 96.2

EDGE HILL

B.R. 20.5  
D.R. 12.6  
I.M. 87  
Pop. 135.8

ABERCROMBY

B.R. 21.3  
D.R. 16.6  
I.M. 113  
Pop. 66.0

WAVERTREE

B.R. 17.4  
D.R. 9.9  
I.M. 71  
Pop. 16.1

TOXTETH-EAST

B.R. 13.8  
D.R. 12.9  
I.M. 45  
Pop. 23.6

TOXTETH

B.R. 25.0  
D.R. 14.5  
I.M. 81  
Pop. 126.0

WOOLTON

B.R. 18.2  
D.R. 9.6  
I.M. 106  
Pop. 3.4

1928

Population 866,000

Birth Rate for whole City - - 22.1  
Death Rate for whole City - - 13.2  
Infantile Death Rate per 1,000 Births 94  
Population per acre, whole City - 36.2

Diagram showing Birth Rate (B.R.) per 1,000 of estimated  
" " Death " (D.R.) population.  
" " number of deaths of Infants under One Year  
" " out of every 1,000 born (I.M.)  
" " estimated population per acre, excluding  
Docks and Quays and including Parks  
and Open Spaces (Pop.)

In each of the  
districts  
of the City  
during  
1928.

POOL

# FASAKERLEY

Pop.	81
I.M.	85
D.R.	69
B.R.	24.3

WEST DERBY

# WALTON

Pop.	47.2
I.M.	81
D.R.	11.3
B.R.	16.3

LIN EGE

# KIRKDALE

Pop.	95.2
I.M.	107
D.R.	14.0
B.R.	23.3

BEROROMBY

LIE

DEATHS REGISTERED IN THE CITY OF LIVERPOOL.  
DURING THE YEAR 1928.

[illegible]

